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THE PEDAGOGICAL SEMINARY

A QUARTERLY

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EDITED BY

G. STANLEY HALL,
President of Clark University and Professor of Psychology and Education

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THE

PEDAGOGICAL SEMINARY.

Founded and Edited by G. STANLEY HALL.

VOL. XIII. MARCH, 1906. NO. 1.

A STUDY IN PERSONAL HYGIENE.

By THOMAS SCOTT LOWDEN, Fellow in Psychology, Clark University.

I.

KEEPING WELL.

Personal Hygiene is as old as civilization. Indeed savages give some attention to it. There is a universal interest in health. The great need of health in the individual for efficiency, morality and happiness, and in the race for its development and larger life, has stimulated this study.

As a basis for the study I take the papers in answer to the following questionnaire on "Keeping Well" sent out by President Hall.

TOPICAL SYLLABUS. NO. 21.

(Academic Year 1903-1904.)

KEEPING WELL.

Will you kindly write down, using the points below only as suggestions, what you have done in the past or now do to increase your health and prevent disease? Be frank and confessional, stating sex and age. The report will be confidential, and it is hoped the comparative study will help others. Answer only points that appeal to you.

1. What kinds of ill health have you chiefly feared from heredity, personal experience with disease, or sickness of friends, and what have you done or are now doing to avert general or special dangers?

2. Have you ever affected or desired slight but elegant invalidism? How did you first realize the advantages of the most robust health, and to what changes of regimen did this hygenic revival prompt?

3. What do you eat or drink, or refrain from, to be well? State habits in regard to chewing, eating slowly, vegetable or meat diet, sweets, eating much or little, regularity, hearty or dainty breakfasts or suppers, social dinners, exceptional things for health, tea, coffee, cocoa, soda, drinking with or at or between meals, etc.

4. Mention any kind of medicine which you have used; tablets, nostrums, drugs, ointments, salves, plasters, patent medicines, home cures, grandmother's herbs, etc., or with which your friends have had experience.

5. State your experience with toilet soaps, rubbing, cold or hot bath, massage, manicure, cosmetics, treatment of hair, skin, complexion, bust, hands, nails, teeth, feet. What do you do believing it of special value to keep fresh, beautiful or young?

6. State your habits in regard to sleep, regularity, ventilation, bed, clothing at night, sleeping alone. Have you taken anything to aid sleep, and, if so, give your experience with it? How have you erred in sleep hygiene, midday siesta, eating or drinking or not doing so as preparation for sleep? What are your modes of getting to sleep?

7. Exercise. Tell how you exercise, how much, time of day, environment. Do you ascribe special value to particular forms? State your views, experiences and observations generally.

8. Dress. Give facts in regard to amount, parts most and least protected, shoes and feet, hands, corsets, special articles worn.

9. Work and study. What can you mention in respect to dangers and safeguards, postures, amount, kind, time of day?

10. What do you do against inherited or family tendencies to disease, *e. g.*, consumption, nerve troubles, insanity, dyspepsia, constipation, gray hair or baldness, tendency to fevers, bleeding, headache, anemia, colds, impure blood, rheumatism, heart troubles, etc.? State your secret fears and what you do or have done. How do you feel about hereditary handicaps? Have you ever blamed parents?

11. In times of epidemic, what have you done to protect yourself from infection by germs that enter the system in water, milk, air, etc.?

12. Have you had experience with quacks or advertisers and their nostrums or panaceas, or tampered with drugs, opiates, or stimulants, and, if so, on what theory and with what result?

13. If you have had a fit of sickness, how has it affected your resolves and practices of personal regimen? Must one be sick to learn? What experiences have you gained that others

might profit by in the philosophy, art, or science of keeping well? Have you derived special help from others' counsel, and, if so, how and what?

14. Have you general views about exposure, toughening, coarse fare, roughing it, treating health harshly to make it vigorous versus great and constant care to avoid every excess and keeping far within the bounds of danger?

15. Will you state your views about regimen at monthly periods if you are a female, or about sex and health if you are a male?

16 State your views on the relation of mental states and environment to health.

17. Can you sketch an ideal life, day and night, summer and winter, of body and mind, if your sole aim were to keep at the very top of your condition and live as long as possible? For if health is wholeness or holiness, is not this the highest end of life and the heart of all education, so that to be good and wise is to be well?

It has been the purpose of the questionnaire to get the health habits of intelligent people, those interested in health, morals and education. Personal hygienic experience has been sought, not theories. Four hundred and fifty manuscripts have been sent in, and many of them show evidence of thought and self-examination. They have been prepared by students in normal schools, colleges and universities; by teachers in the public schools, fellows, instructors and professors in the higher institutions of learning; by physicians, ministers and laity. The value of the reports is qualitative. However, the quantitative side is often suggestive. They come from Massachusetts, New York, New Jersey, Pennsylvania, Ohio, Indiana, Kansas, Utah and California. Poland is also represented.

There are some who believed the questionnaire, "Keeping Well" would throw those answering it on the morbid "tack." The manuscripts do not show this. Comparatively few men and women are ready to speak of their ills. Most are prone to conceal them. Should the questions seem at times to have "tapped" the morbid in the frequent desire for health, it may be said that the papers manifest average good health and that the wish is for more health, a strong desire to get at the very "top" of one's being. In the answers on fear of disease, heredity, the toilet, patent medicine, quacks and sex hygiene I have felt a reservation lying behind the facts given, significant as many of them are. One's personal hygiene and health are pretty much his most private life and self and it has not been an easy matter to get at the facts necessary for this study. In a teachers' institute where I was giving a series of lectures on education and hygiene to six hundred teachers, two hundred and fifty voluntarily took the questionnaire to answer it. Only eight did so. A superintendent of city schools said he would send me fifty manuscripts from his teachers. He could only send nine. A college professor particularly interested in personal hygiene and in getting the questionnaire before his students, gave them the option of answering it or taking a difficult examination in physics. When they saw the two lists of questions, nearly all chose the examination. From two universities, with the vice-president of one and the dean of the other personally interested in my study, I received two manuscripts. However, I have been fortunate and greatly encouraged in many quarters, particularly in the educational institutions that regularly answer the questionnaires sent out by Clark University.

In chapters I and II, I shall be objective, presenting simply the facts from the manuscripts, withholding largely my personal conclusions.

THE FEAR OF DISEASE.

Of the 350 who answer groups of questions 1 and 10, 70% fear disease. Of the 245 who fear disease, 38% fear hereditary diseases or tendencies to disease; 33% fear certain diseases, having heard or read of them; 16% from having seen disease; 13% fear diseases from experience, that is, from having had them.

Diseases feared through heredity. 30% fear consumption; 13% heart failure; 13% rheumatism; 12% nervousness in some form; 10% stomach trouble; 8% insanity; 8% cancer; 7% Bright's disease; 5% headache; 3% intestinal weakness; from 1 to 2% paralysis, scrofula and eye weakness.

Diseases feared through hearing or reading of them. Smallpox, 25%; diphtheria, 18%; scarlet fever, 18%; typhoid fever, 10%; consumption, 10%; cancer, 8%; heart disease, 3%; appendicitis, 3%; lockjaw, 2%; pneumonia, 2%.

Diseases feared, having been seen. Consumption, 56%; cancer, 15%; pneumonia, 11%; stomach trouble 11%; then follow typhoid fever, appendicitis, diphtheria, scarlet fever, rheumatism, nervousness and paralysis with lower per cents.

Diseases feared, having been experienced. Typhoid fever, 20%; pneumonia, 20%; stomach trouble, 15%; rheumatism, malaria, fever, appendicitis, diphtheria and nervousness follow with lower per cents.

To show the spirit of the answers to the questionnaire and to enable the reader to make his own inferences, I shall quote from the papers from time to time. Space, however, will permit only of a few typical answers.

M., 46. "I inherited gastric trouble and must attend carefully to dieting. I blame my parents for my poor constitution and still more for not insisting on my care of the stomach and dieting earlier."

M., 46. "Fear Bright's disease through heredity. I am avoiding all intoxicating drinks and spending much time on my feet in the open air."

F., 20. "Fear consumption and insanity. Mother died of consumption, father died insane. Have a feeling of dread that I shall be a victim to one or both diseases. This feeling has the greatest influence on my life. I always feel handicapped."

F., 28. "Sometimes I have blamed father that he inflicted upon us all the dread of his illness—nervousness. As to mother, she was too young to understand when she married, but father knew."

M., 21. "Have often feared nervous disease. Do nothing against family tendencies, but have often blamed my father for marrying and having children, all of whom are nervous and unhappy because of ill-health."

F., 24. "I do nothing but try to live hygienically. I often blame my parents and seeing my own children pale, nervous and ill, I blame myself, for I ought not to have married."

F., 19. "I fear insanity from the nervousness which I inherit and feel handicapped. Believe that persons who are nervous in a marked degree have no right to bring children into the world to suffer as nervous children do."

F., 19. "Have feared insanity from heredity; try to avert it by being careful not to overtax my nerves in any way, especially subjecting myself to undue excitement. I try to keep from becoming gloomy and despondent and guard against worry in any form."

M., 24. "Do not exactly blame my parents for my inherited weakness, but do not think they did me justice in not giving me counsel in overcoming these inheritances. Though I feel keenly the handicap, I feel more keenly what I have lost through not having been advised by my parents. I worried many years and spent much money over what I feared was an inherited sexual weakness, finding out only recently that I am sexually sound."

These few cases are sufficient to show what a nightmare weight hereditary fear, whether well founded or imagined, is likely to become.

Fear through having seen or heard of disease.

F., 40. "When a child, I feared greatly hydrophobia, lockjaw and leprosy."

F., 19. "When fifteen, I feared leprosy, as I had heard so much about it."

F., 19. "I avoid sitting with my right knee crossed over my left, as I have heard it said that this causes appendicitis."

F., 20. "When I was younger, I had a secret fear that I might die of consumption. So I used to carry a horsechestnut in my pocket, for I had heard some one say that this was a good remedy."

F., 19. "I had a secret dread of leprosy, and many a time I have thought I had it, and would imagine my fingers and toes dropping off. I also dreaded lockjaw and was always careful to dress every little scratch lest I should get it."

F., 18. "I used to fear diphtheria very much. When I was twelve I had two friends die of it. I did not wish to let my parents know my fears, so when alone I used to wash my throat out with different kinds of medicine."

F., 19. "Have always feared smallpox because when a child, I saw a woman who had been afflicted with the disease and ever after when I heard of smallpox it made me shudder, for the image of her much disfigured face immediately came up in my mind."

F., 19. "I fear cancer. However, there is no tendency to it in the family, but when I was eight I played with a child whose aunt died of it and my playmate used to tell me all about it. Then a neighbor died of tetanus caused from cancer when I was twelve. I heard my brother say that tomatoes caused cancer. Preserved tomatoes were my favorite sweets, so I just quit off and told my people that I did not like them any more."

To the question, "What are you doing against inherited tendencies?" the following answers are typical:

Consumption. "Live hygienically;" "Attend to general health;" "breathe deeply and slowly, completely filling the lungs;" "exercise freely;" "live a rigorous out-door life;" "guard against exposure;" "sleep in well-ventilated room and take long walks;" "keep away from consumptives;" "avoid over-tiring and give care to a nourishing diet." "take much fresh milk and raw eggs;" "make use of chest development exercises night and morning;" "keep dry and warm and out of drafts."

M., 43. "While inheriting a fairly good constitution, still at twenty I showed signs of weak lungs like my father. For several years I took daily exercise in deep breathing until I developed a chest measurement surprising to myself and friends who knew me as a boy."

F., 18. "Feared weak lungs from heredity. To strengthen them I have used my knowledge of the Swedish system of physical culture to formulate a special series of exercises adapted to my needs. These exercises are for flattening the shoulder blades, chest expansion and better respiration. I take these exercises morning and night. I take long walks and row much."

Nervousness and tendency to insanity. "Do not worry;" "exercise much in open air;" "avoid all excitement in reading, hearing and seeing;" "give care to diet, sleep, exercise and recreation;" "do not over-work;" "try to keep myself under control;" "take an occasional tonic;" "keep down excitement and despondency."

Heart weakness. "Avoid over-exertion;" "keep quiet;" "work only in moderation;" "no running, no rushing;" "Control my temper."

Rheumatism. "Always wear woolen underwear;" "avoid all exposure;" "give special protection to the limbs;" "attend to general health;" "keep from drafts and dampness;" "avoid meat."

Kidney weakness. "Keep dry and warm;" "avoid all exposure;" "special protection to the parts of the body near the kidneys;" "avoid brackish and hard water;" "live in open air and abstain from all alcoholic drinks;" "try to keep my general health at its best."

Constipation. "Drink much water;" "eat much fruit such as prunes;" "exercise freely;" "walk much;" "avoid sitting much;" "knead the abdomen;" "eat grated carrot before breakfast;" "give care to the food eaten;" "eat greens and lemons;" "take trunk-twisting exercises before going to bed."

Stomach weakness. "I diet;" "refrain from pastry, cheese and fats;" "drink much water and avoid fats and sweets;" "use fruit and milk;" "refrain from beans, cabbage and pork;" "drink much hot water;" "eat slowly and chew thoroughly;" "eat many vegetables;" "refrain from coffee and tea;" "no ice water;" "curb the appetite;" "avoid pickles, acids and condiments;" "massage the stomach;" "take a little exercise, but not violent, after each meal;" "avoid work for at least a half hour after the meal;" "make use of good cheer and entertainment at meal time."

It is readily seen from these partial answers taken from the papers, many of which are written out in much detail, that those who fear disease through heredity understand something of hygiene, and some are doubtless doing all for themselves that can be done. The questionnaire submitted to the ignorant and lower classes would, without doubt, call out a very different type of answers. A few seem to underestimate their hereditary tendency, while others have a morbid fear.

AFFECTING INVALIDISM.

Have you ever affected or desired slight but elegant invalidism? One hundred and twelve answer affirmatively and about an equal number negatively. Those who have done so, say they did so out of "mere fancy;" "wanted sympathy;" "wanted to be delicate and was not;" "like to be petted;" "wanted the people to bring flowers;" "sister was delicate and got the most good things;" "wanted to attract attention;" "admired paleness;" "weighed too much;" "wanted to get out of doing work;" "a delicate friend could have her own way;" "wanted to be fussed over;" "desired care and company;" "wanted others to have anxiety for me;" "did n't want to go to school or church;" "simply enjoyed it."

Ailments feigned. Headache, toothache, backache, "feeling badly," attempts to prolong sickness having recovered, "hurt myself," affecting deafness, lameness and eye-trouble. Twelve report as having greatly desired to faint at school or church or in some public place to be the centre of attraction, be carried from the crowds and taken home in a carriage amid the many whispers, "Poor girl how pale she is! How sorry I feel for her!"

The papers indicate that it is the feminine sex that is given to feigning illness. Boys do not want "to be delicate," "pale," "thin," and "weak," and do not care to be "fussed over." However they do assume indisposition to get out of doing work. The writer has done so to get rid of home and school tasks. The age of feigning illness is from eight to seventeen, more particularly from twelve to fifteen.

How did you first realize the advantages of the most robust health? "Seeing others ill;" "health in others;" "poor health of father;" "illness of sister;" "real sickness on my part;" "wanted to become beautiful;" "did not want to be called 'thinny;' " "wanted to become an athlete;" "being really miserable;" "meeting robust, jolly, bright associates;" "affecting illness, induced a real illness;" "the various opportunities good health brings;" "strain of work in the high school;" "wanted to be able to do as others;" "pride in looks;" "only the strong and well could study."

F., 18. "Merely wanted to be delicate, thinking it was feminine. Became disgusted with my notion in seeing others affecting illness."

F., 17. "Used to be deaf, and a long time after I could hear I feigned deafness. A long spell of typhoid fever induced me to feign no more."

F., 18. "After an illness, I enjoyed being an invalid as I received special attention, unusual delicacies and much care. Toothache led me to appreciate being well."

F., 19. "Wanted to faint in church and be carried out. Became tired of being sick, resolved to improve, got up early, drank milk, hardened myself and by the end of the summer was well."

F., 19. "At thirteen, I greatly admired a thin, pale, sunken-eyed girl. I thought her so lovely and tried to be like her. I used to feel my ribs to see if I were getting thin. I came to realize the value of health a year ago when I came to the normal school. A girl very active and alway merry appealed to me."

M., 21. "Weighed 190 lbs., and disliked my size; disobeyed the laws of health to reduce it. When I entered college and joined the football team I came to admire strength, combined with speed and activity. I began to reform my evil habits, abstaining from intoxicating drinks, tea and coffee and selected a nutritious diet, drinking much milk."

F., 19. "I longed to be delicate for a school companion was delicate, and her parents gratified her every desire. One day I had a slight headache and concluded this would be an elegant time to be delicate. So I tried to work up mother's feelings by pretending my head ached three times as hard as it really did. I feigned this dreadful headache three days. On the fourth I was taken with a bilious attack and was sick a week. This wholly cured me of pretended illness."

It would be interesting to know how many adults, who having been a little sick, really do enjoy the lingering "after-sickness," the luxury of being still slightly indisposed, with appetite to appreciate all the delicate edibles, and mind to enjoy the flowers, attention of friends, the breakfast in bed with the feeling of growing stronger, all danger past.

PERSONAL DIETARY.

What do you eat or drink or refrain from to be well? Two hundred and fifty-five answer this question. 56% say they eat no particular food for health's sake; 44% do. 38% report abstaining from no food on health's account, while 62% are obliged to do so.

Twenty-six per cent. eat much fruit as apples, oranges, prunes and rhubarb, while 22% eat many vegetables for health. The vegetables avoided are usually pickles, cucumbers, radishes, onions, cabbages and dry beans. Only 6% make mention of meat for health and this is beef, while 14% refrain from meat particularly fried meats, pork, veal, ham and canned meats. Some cannot eat eggs raw or cooked in any style. Bread and the cereals are seldom mentioned, graham or whole wheat occasionally. Hot or warm bread is condemned. 20% abstain from pastry; pie, puddings and doughnuts are regarded as unhealthy; 17% eat but little sweets particularly candy; 7% let cheese alone and 6% all grease.

Eleven per cent. drink much water for the health; 9% milk, while 4% must let milk alone. Much more coffee is drunk than tea, yet according to the reports more must abstain from coffee as it brings on headaches, nervousness and dyspepsia. However, there are many who are obliged to drink coffee to ward off these same indispositions. Many take cocoa instead of coffee or tea. Those who have drunk soda water freely have found it injurious. Over and over again water is mentioned as being the only safe drink. The fact is brought out that coffee may be drunk in moderation by many people with good effect, but such excess as two large cups three times a day is to be avoided. One to two cups in twenty-four hours is not excess. Where an equal amount of tea is drunk, its effect is worse than that of coffee.

Regularity of meals. Nearly all eat three regular meals a day. Some few but two, omitting breakfast, while as many eat four times daily. Breakfast and the evening meals are heaviest. With the majority two heavy meals are eaten daily. The time of the light meal depends upon custom, work, section of the country, health and convenience. There is a tendency among students and the professional classes to make the midday meal light, the evening one heavy. The spirit of the papers is strong against the "no breakfast" idea and emphasizes a hearty morning meal.

Habits in chewing. Very few are conscious of how they chew. Most say they eat slowly with a tendency to rapidity. Those who think they chew their food thoroughly believe they should spend even more time in doing so. The import is that the food is too frequently "bolted down" to be easily and well digested.

Kinds of Food and Amount. Vegetables and fruit are the leading foods. However, there is no tendency to become wholly vegetarian. About all want meat once a day. Many mention meat for breakfast, while others want it in the evening. The average would be meat twice a day. Broiled or roast beef, fish and eggs are often spoken of. Some insist on meat at every meal. The cereals are not often mentioned.

Water as a drink at meal time is gaining in favor. As many drink water as coffee and many more than tea. From one to two glasses of water are drunk at each meal. Some take as many as three glasses. The water drinkers report as drinking from one to four quarts a day. Some drink from a pint to a quart of water on retiring and the same amount before breakfast. This is for stomach, bowels, the prevention of constipation and to induce sleep.

The following quotations will illustrate the personal variation in regimen: "Avoid meat because of rheumatism;" "can eat everything, all agree with me;" "A hearty breakfast necessary for me;" "Could I always have what I wanted, it would be fruit, crackers and water;" "must have meat and plenty of it three times a day;" "refrain from meat because of complexion;" "four glasses of water at each meal and much between;" "three quarts of water a day, before and after meals;" "reducing my flesh by abstaining from vegetables."

F., 17. "Eat and drink everything. Eat a large amount of meat, also vegetables and sweets. Always eat a hearty breakfast and a heavy meal late at night when at home."

F., 20. "Refrain from drinking coffee for when I drink it, I feel a dullness over my entire body. Drink milk instead. I am obliged to deny myself sweets for they impoverish my blood."

M., 43. "Have always eaten simple food and only a few dishes at a meal. In order to insure sound sleep I make my supper of bread and milk, avoiding tea and coffee. Any deviation from the rule brings on nervousness and insomnia."

M., 44. "Believe as my father, who was a distinguished physician, that people eat too much meat generally. My family have it once a day, alternating between flesh and fish. For breakfast we have fresh fruit, apples when we can get them, followed by a cereal, then bread and butter with honey or marmalade."

M., 45. "Seldom have a pie or doughnut in the house, almost no tea and coffee and but a small quantity of meat. Have all been much better since reducing the quantity of meat. Use many vegetables. My children have been brought up on this diet and are free from aches, pains and colds"

M., 58. "Eat light breakfast and heavy midday meal. Besetting sin is over-eating and under-exercising. Must avoid acids, eggs and milk and can eat but little fruit. Cannot eat much fat; get bilious if I do. Have suffered much from constipation. Brown bread and nuts clear me up. Drink weak coffee. Began to smoke and drink coffee at

45. These have helped my constipation and diarrhœa. Eat very fast, scarcely taking five minutes. Don't believe in taking 40 to 50 chews to a mouthful."

M., 45. Must have three meals a day; prefer four and want an abundance of meat at every meal. Like four to six eggs and as many oranges for breakfast. Particularly want coffee and milk for my drink. Want much bread, not the made-up cereals, many vegetables, such as cabbage, potatoes, corn, and tomatoes; pie, cake, doughnuts and cheese; beef in any form, especially broiled and roast; pork, sausage, ham, veal and mutton. I am fond of apples and sometimes eat a peck a day. [This man is a professor in a university, has a robust constitution, is a hard worker, never takes exercise and is irregular in his sleeping habits.]

The varied statements made on the personal regimen make it evident that no universal, formal dietary can be prescribed. What one eats, the amount he eats and when he eats is wholly individual.

THE TOILET.

Soap. Much diversity of opinion is expressed concerning the use of soap. Some can use any kind without injury to the skin; others only the best; a few never use soap on the face. The pure glycerine and castile soaps are most highly recommended. "Avoid all highly perfumed soap;" "Can use any soap;" "can only use castile;" "never use soap on my face except when it is very dirty;" "soap, even the best, is bad for the complexion;" "the best of soaps irritate my face;" "my mother got a skin disease by the use of cheap soap."

The Bath. More take the warm bath than the cold and say they get no reaction after the cold bath. All who are able to take the cold bath find it highly beneficial. Those who take the cold bath do so in the morning in the form of a plunge, sponge, or shower, with the water as cold as it will flow from the faucet, then rubbing briskly a few minutes with a coarse towel. Many take a warm bath followed by a cold shower. The warm or hot bath is taken once or twice a week, sometimes daily. As morning is the time for the cold bath, just before going to bed is the time for the warm. Many take the warm bath to induce sleep, finding it relaxing and restful. Some find the warm bath weakening and only take it occasionally for cleanliness.

Those who cannot take the cold bath say, "Brings on rheumatism." "it weakens me;" "can't get up a reaction;" "derive no benefit from it;" "it makes me ache;" "can't get over the chilliness;" "they make me nervous;" "they are of value for a time, then lose their worth;" "can't get up a good circulation for hours after."

Those who can take the cold bath say, "Induces a good circulation;" "it gives me a stimulus for the whole day;"

"most refreshing;" "it invigorates;" "prevents colds;" "gives health and freshness;" "has rid me of 'that tired feeling.'"

Those who take the warm or hot bath say, "It is cleansing;" "prolonged hot bath induces sleep;" "brings rest and sleep;" "quiets my nerves;" "helps me when tired;" "cures my cold."

F., 17. "I must take cold and hot baths to feel well."

F., 20. "Two hot baths a week and a daily cold bath have a delightful effect upon me."

F., 21. "Find my health much better when I take a cold bath regularly every morning on rising. I use the water as cold as it will flow. I am in one minute.

M., 58. "Don't believe in excessive bathing. One bath a week just as cold as the water will flow from the faucet; the room must be heated. The cold bath tones up and excites and freshens the capillary work."

Rubbing and Massage. All testify as to the merits of rubbing the body after the bath. "Rubbing makes my body glow;" "starts vigorous circulation;" "for me rubbing is most beneficial;" "it brings sleep;" "it allays my rheumatism;" "it takes out stiffness;" "it makes me strong;" "it is health giving."

F., 18. "Rubbing vigorously helps my circulation and makes my skin smooth. I take a very hot bath, followed by a dash of cold water, then a brisk rubbing."

F., 19. "Rubbing the stomach promotes digestion; rubbing my feet reduces the swelling; rubbing the body produces circulation."

As yet massaging is not generally practiced and its merits not known. The masseur and his art are looked upon with a little contempt, being associated with beautifying, cosmetics and the like.

"I massage to develop the undeveloped parts of the body;" "I massage to take out the wrinkles I put in at the age of thirteen by constantly frowning;" "massage my arms and neck to fill them out;" "have gotten rid of my black-heads by washing my face in hot water then massaging."

Manicuring. Very few employ a professional manicure. Some say they regard the money paid out as lost. Not all bestow special care upon the nails. Some care for their nails from once to three times daily, others once a week.

Cosmetics. The reports here are meagre. Fewer than a hundred speak of using anything on the face; bay rum and talcum powder are mentioned, the latter being used to take the "shine" off and to absorb perspiration. A few use a complexion powder or face lotions. The indications from daily life are that there is more massaging and a greater use of cosmetics than these returns indicate.

Skin and Complexion. Many are trying to improve the skin and complexion through diet, the cold bath, exercise in open air and care of general health, regarding the skin as more than "skin deep" and the complexion as depending upon the welfare of the whole body.

"I diet and rub;" "keep the stomach in order;" "keep the bowels open;" "massage and give care to food and sleep;" "drink much water;" "steam for black-heads and rub;" "use lemon and rose-water;" "steam my face every night;" "use benzoin and glycerine;" "hot water on the face, followed by a dash of cold;" "massage for pimples."

F., 19. "Have found those lotions beneficial for the skin that contribute to its natural oil; those injurious that dry it up."

F., 40. "Glycerine and lemon for skin and complexion. These soften and whiten. Some, however, cannot use glycerine for with them it causes hair to grow on the face."

Bust, Hands, Feet and Teeth Only five mention giving care to developing the bust and this through physical culture. The hands and feet, too, have but little attention. Many, but by no means the majority, speak of bestowing great care upon the teeth. Some go to the dentist twice a year to have teeth examined. The teeth are brushed once daily, twice, three times and particularly night and morning and after meals. A tooth powder is used generally once daily. The evidence is that there is a lack of care of bust, hands, feet and teeth.

Care of the Hair. On no other questions have the answers been so varied. "Wash the hair often;" "once a week;" "rarely wash it;" "give it a wet shampoo every two weeks;" "every four months;" "never give it a wet shampoo;" "the frequent dry shampoo;" "burn the ends every new moon;" "every three months;" "twice a year;" "once a year;" "never;" "cut the ends every month;" "twice a year;" "never cut it;" "use tonic;" "salt water;" "alcohol;" "vaseline;" "kerosene;" "borax water;" "tar soap;" "white of egg;" "bay rum;" "never bay rum;" "witch hazel;" "quinine water;" "Danderine;" "Herpicide;" "Seven Sisters;" "Never use anything on it;" "brush the hair frequently;" "seldom;" "never;" "brush it on getting up:" "on going to bed;" "brush it three times a day;" "once a week;" "thoroughly once a month;" "comb the hair always;" "never comb it;" "comb it once a day;" "before breakfast;" "before going to bed;" "braid the hair every night;" "always let it hang loose;" "give frequent sun baths;" "massage the scalp daily;" "massage it once a week;" "shave the hair to the scalp."

F., 20. "Have used Danderine, but I am now using kerosene before I wash my hair."

M., 19. The best thing I have found for the hair is to saturate it in alcohol once a week."

M., 20. "My hair falling out I tried many patent tonics. Finally I had my scalp shaved which brought the hair back again."

F., 23. "Brush my hair daily, and braid it every night; wash it and trim the ends twice or three times a month. My hair is heavy and four feet long."

F., 20. "I clip the ends of my hair every new moon. This has a good effect. I have beautiful hair that reaches to my knees. I give it a good shampoo and massage, rubbing the scalp gently until dry enough to comb."

M., 44. "I am inclined to think wearing a close derby hat constantly has tended to make my hair fall out. I have found a specialist in dermatology who has successfully prescribed to prevent baldness and restore, in part, the lost covering of my scalp."

M., 40. "Growing bald, I sought the best dermatologist in the Middle West, a specialist of renown in a medical school of a well-known university. I spoke of heredity and he laughed saying I should have a full head of hair within three months. I paid him a fancy price and continued the treatment three months without improvement. He changed the treatment, but I could get no druggist to fill the prescriptions. All said the ingredients called for would take all my hair off in a few minutes. I then went East and consulted the best dermatologist I could find. He told me mine was a case of heredity and due to the stretch of skin across the top of the head, no nourishment being afforded the follicles and at my age the heredity could not be changed even with daily massaging. I paid him five dollars for what I regarded sound diagnosis and returned home satisfied."

What do you do to keep fresh, beautiful or young? "Strive to keep well and happy;" "endeavor to be content;" "diet, sleep and exercise;" "a moral life;" "a spiritual life;" "walks, fresh air and bath;" "agreeable companions;" "young people and children about me;" "no worry, no overwork;" "rest, recreation and temperance in all things;" "follow nature," "control the emotions and passions;" "by balance of mental and physical work;" "avoidance of all intoxicants, tobacco, tea and coffee;" "massaging and well-fitting clothes;" "keep cheerful and drive out despondency;" "ventilation and cleanliness."

M., 33. "If the bath and daily play exercises do not keep me young then I am doomed."

F., 19. "To keep young I feel that I shall have to bathe, exercise freely, sleep, have cheerful company and keep in good spirits."

F., 21. "To keep young and fresh I shall be obliged to go to bed early, live much out of doors, take daily cold bath, eat in moderation and not worry."

F., 22. "I believe a calm, contented mind, trust in the spiritual laws instead of the material are the most valuable for producing youth and beauty."

M., 45. "Proper diet, clean, normal life, active and contented mind, out-door life and association with young people. My wife is an excellent example of this."

SLEEP.

Number of Hours. The reports vary from 6 to 11 hours of sleep out of the twenty-four. Eight hours is the usual amount. Two and a half times as many persons take more than 8 hours than less; three times as many report 9 hours than 7.

Time of Sleeping. The usual time is from 10 P. M. to 6 A. M. Those who take 9 hours sleep from 9 to 6 or from 10 to 7. Some retire at 11 and get up at 7; others at 9 and arise at 5.

Regularity of Sleeping. The majority are regular in their sleeping habits. Many say they must be regular to feel well and accomplish their work.

Nature of Bed and Bedclothing. Most sleep on a medium hard mattress usually hair. Some prefer a hard mattress, others a soft one. Twenty-five per cent. speak of sleeping on feathers, particularly in winter, some the year round. The clothing frequently mentioned consists of two sheets, a blanket, comforter and spread or quilt for winter. "Just enough clothing to be warm;" "light but warm bedclothing;" "not too many covers, they tire me;" "make use of many but they are light;" "the fewer the better, just enough to be comfortable."

A few make no use of pillows. The greater number speak of completely changing the clothes worn in the day.

Ventilation of the Bedroom. One hundred and fifty say they ventilate thoroughly. The phrases used are as follows: "Ventilate very thoroughly;" "give it the greatest care;" "can't rest without good air;" "completely air my room day and night;" "windows must be open in the coldest weather;" "must ventilate or be half dead next morning;" "have a nervous night if the air does not circulate freely."

Aiding Sleep. Very few resort to drugs to induce sleep. Those who have done so, have found the after effects evil. Many take a hot body or foot bath, drink a glass of hot water or milk. Some eat a cracker, an apple, lettuce, onions, or light lunch to bring on sleep.

Mistakes in Sleeping. "Have overslept;" "too much sleep brings headache;" "staying up late disturbs my night's rest;" "an afternoon nap spoils my night's rest;" "not taking enough sleep;" "the habit of sleeping in the afternoon prevents my sleeping at night."

The Afternoon Nap. Here opinion is divided. Many advocate an afternoon nap. The time taken varies from five minutes to two hours; from a half to an hour is the usual time reported. The majority are opposed to the afternoon nap. "If I sleep in the afternoon, I can't sleep at night;" "have often spoiled a night's rest by a day nap;" "I should have cultivated sleeping in the afternoon and thus husbanded my strength;" "I sleep five minutes sitting up;" "must have a nap." "Have made a discovery," said a university president recently. "Have found that I can do much better work by taking an afternoon nap of half an hour."

Eating before going to bed. The greater number speak against it, while some say they are obliged to eat a little before retiring. "Have eaten at night but it does not agree with me;" "never can eat within three hours of retiring;" "eat late and sleep badly;" "Must eat before going to bed:" "drink water and eat crackers;" "never go to bed hungry;" "If I study late, I must draw the blood from my brain by eating;" "a glass of water is necessary."

Do you sleep alone? Most do. All say it is best to sleep alone. "I rest better alone;" "everybody should sleep alone;" "a delicate person should sleep by himself;" "sleeping with an older person does harm;" "I do not sleep alone, but feel better when I do;" "I am rested more in the morning when I sleep alone;" "I should sleep alone could I have my way."

Modes of getting to sleep. Besides eating, drinking and taking a hot body or foot bath to bring sleep, 75 say they have a method which they regularly or occasionally make use of in getting to sleep. These methods are either physical or mental.

The physical methods are wearying the body, relaxing it or some part of it and placing the body in a certain position. The first is illustrated in the physical culture or apparatus exercise before retiring. It may take the form of tiring out the body as suggested in the following statement: "I frequently lie awake and find it necessary to get up, stretch out on the hard floor and there tire out the body. After half an hour of this 'crucifying the flesh,' I am usually able to fall asleep."

The second form of the physical method is seen in the stretching out of the body on the bed, making it lie lax and limp, the limper the more sleep-bringing the condition. In the writer's case, he finds it necessary to inhibit the tension of the muscles of the lower jaw, letting the jaw hang loosely down. As long as the two rows of teeth are firmly together there is no sleep. Studying an eight-weeks old infant recently, I noticed it wavering between sleeping and waking. The muscles of the head, neck and limbs were relaxed and I was wondering why it did not sleep. Presently I saw the index finger of the left hand standing up stiff and rigid by itself. I relaxed it by soothing it down to a restful position, and the babe was immediately asleep. This infant has a nervous temperament.

The third physical mode of getting to sleep consists in placing the body or some part of it in a certain attitude as drawing up the left leg while the right must lie stretched out or *vice versa;* lying on the left side; on the right; lying with the arms stretched parallel with the body; with the arms about the head; lying flat on the abdomen, as a college student says she has done for years; stretch out on the flat of the back; wearying the muscles of the eye by a fixed gaze at some object; the hypnotic influence, perhaps, entering in.

Under the mental forms may be mentioned wearying the mind by work, strain, deliberately thinking hard on some difficult problem to the point of mental exhaustion; gradually removing mental strain by monotonous humdrum and repetition as in saying the alphabet over and over; counting, reading or being read to; reciting familiar verses; running over tables of well-known dates; humming a lullaby or dreamy air; being sung to; soothing, soporific music from piano or harp; falling water. Irving speaks of being lulled to sleep by the cataract of Lindaraxa and the music coming up to his chamber window from the Spanish serenaders below. All know the power of the "swish" of water, the murmuring stream, the slow eaves' drip, the fountain's flow, the rain on the roof to bring on sleep. The influence of music to quiet the nerves as well as stir them has long been recognized. There is the rhythm of activity and that which induces repose; the latter is doubtless the former, lulled perhaps with long, slow reaches, no short stretches of wave-dashings; broad, gentle swells with no rocks near to break upon, to fret and foam,—a limitless expanse of appearing nothingness, no thoughts intense, if any, pale.

Then sleep is brought on by thinking quietly of something pleasant, rather than exciting and disagreeable. A woman writes: "I can't sleep after spending an evening with people I don't like,—those that have no apparent interest in what I am interested." The writer has often fallen asleep by watching the hypnagogic pictures at play.

Mental inhibition is a common mode of getting to sleep. When the mind is preyed upon by some fixed notions, the person resolves to supplant it by endeavoring to think of nothing, making an effort to forget self, reducing it to nothingness, creating a void, inducing mental pictures of vast stretches of darkness.

The following are characteristic answers of getting to sleep: "Habitually read myself to sleep;" "think of a hard problem and try to solve it;" "daydream and say poetry;" "count three hundred;" "lie on my right side and think;" "let my mind wander;" "relax and breathe deeply;" lie on my back stretched out flat;" "scatter my thoughts;" "go to sleep by saying 'sleep,' 'sleep,' 'sleep;' " "work on some question until mentally exhausted;" "think pleasant things;" "lie on my right side with left leg drawn up and the right outstretched;" "head low and both arms to the right;" furnish a room in my mind;" "think of a large flock of sheep going one by one through a small hole;" "listen to the tick of the clock;" "think of the day's doings;" "think of some particular thing;" "try to think of nothing;" "relax, determine to sleep and I do."

Many have no trouble in getting to sleep: "I lie down and am asleep;" "asleep as soon as I touch the bed;" "any method makes me the wider awake;" "never try to go to sleep, simply go;" "touch the pillow and know no more;" "shut my eyes and am asleep;" "can scarcely keep awake while I undress."

EXERCISE.

Form of exercise. Two hundred and forty-five make special mention of walking as a part of their daily exercise. Ninety say they take no other. From 15 min. to 3 hrs. daily is devoted to walking, which varies from 1 to 10 miles. The walks are made into the country, across fields, up hill and mountain, along streams, by lakes, through woods and beautiful residence portions of the city, in parks and the city's environs. Short walks are taken before breakfast, the long ones late in the afternoon.

The other forms of exercise often spoken of are tennis, basket ball, physical culture, bicycle, gymnasium, skating, dancing, swimming, rowing, running. Some speak of croquet, housework, gardening, football, baseball, track athletics, jumping, sawing and chopping wood, fencing, horseback riding, and driving. There is strong opposition to "apparatus exercise," neither gymnasium, nor bedroom apparatus is in high favor, nor the more violent forms of exercise. Nowhere is there the spirit of athletics for athletics' sake. All exercise is for health, rest and recreation. Games and plays are emphasized as diverting the mind from the routine work, hence very valuable.

"I am fond of out-door exercise of all kinds, skating, rowing, walking, playing tennis. Gymnasium exercise I have little use for; besides it does not seem to take my mind off my work."

A physician writes: "My exercise consists in chopping, hoeing and gardening. These are as beneficial as the regular prescribed exercise in the gymnasium and at the same time accomplish more for the welfare of others."

Special value ascribed to particular forms of exercise. "Swimming exercises many muscles;" "tennis exercises all the muscles;" "walking and tennis produce vigorous circulation;" "brisk walks are invigorating;" "exercise connected with games and plays are best;" "skating is a mind rester;" "rowing has given me a better set-up;" "rowing is good for the muscles of the back, chest and abdomen;" "tennis gives muscular exercise and mental rest, lifting weights and the like do not give the latter;" "stretching for the muscles of the abdomen so much neglected;" "gymnastics do not rest the mind;" "long walks and deep breathing are makers of health;" "dancing is good, not too much however;" "I detest gymnastic apparatus."

Exercise a Necessity. "If I do not exercise I am dull and lifeless;" "If I omit exercise I get sleepy and tired;" "the value of proper exercise cannot be estimated;" "valuable as exercise, I have found by sad experience that it should not be violent;" "walks are invaluable to me but violent exercise detrimental."

F., 17. "The girls here in the dormitory who take exercise do their work in less time than those who do not. If I do not walk, I simply 'fool' over my lessons. When I walk I have little trouble in getting them."

M., 38. A physician,—"In summer I take tramps for fishing and gunning. I do a great deal of gardening. I incidentally run several miles a week in my practice. The exercise should not be taken consciously as exercise if is to prove most beneficial to mind and body."

F., College student,—"Walk two hours a day; some days I walk 25 miles; choose the woodlands for my tramps when alone. Occasionally go with a friend. Sometimes I close the day with a twilight walk of an hour seeing all I can about the city and in the sky. I do not look upon walking as a dose prescribed for health and to be religiously taken, but enjoy it. I like the Swedish gymnastics, the crew work on the water and ice but find walking most agreeable in every way. My exercise means a great deal of health aud life to me."

For seven years the writer was a near neighbor of the Rev. Dr. John Peat, bricklayer, preacher, telescope lens maker and traveller, and came to know him well.

It was John Peat's custom to skate whenever there was ice, and to take a daily ten-mile walk up to his death. I count myself a good walker, but at the age of eighty he could readily out-walk me. Three or four times he walked over much of Europe, Egypt and Palestine. At eighty-one he went abroad tramping it alone. He took keen delight in learning to ride a bicycle at eighty. He was never ill, needed no medicine or physician's care. He had his sorrows and financial losses. His life was a busy one. His mind was bright and active until his death. He was always a youth, knew no old age and death was a mere passing.

DRESS.

Amount and kind. Men wear about the same amount of clothing the year round, changing the underwear and overcoats to suit the weather. Women generally make greater changes to suit the seasons. The under garments and hose worn are usually cotton. Some wear woolen next the skin the year round to protect against rheumatism. The greater number of women speak of wearing medium-weight clothing. However, many more speak of wearing heavy winter garments than those who mention light. A young lady in ill-health says, "I wear five skirts, four of them of heavy wool, fleeced lined underwear and a chest protector." In contrast I might here mention a young woman in good health who writes, "I get out barefoot, run in the dust and sand, wade knee deep in water whenever I can."

Parts of the body that need most protection. The feet, hands, chest and throat need most protection. The greater number need to give care to the protection of the feet. However, many wear the same weight shoe the year round. Some make use of heavy soles in damp, severe weather. The majority wear overshoes. Some catch cold through damp or cold feet, while others never, being able to let the wet hose dry on the feet. There are those who are obliged to protect the hands, cold hands meaning a cold body. One person says she catches all her colds through her hands. Some complain of cold ears, back and legs. Often the throat and chest need protection.

Special articles of Dress. Nearly all the women report wearing corset, girdle or corset waist. Most wear corsets, and speak of wearing them 'loose,' but 'loose' seems here a flexible term. Some mention wearing furs; a few speak of a woolen chest protector or bandage across the abdomen.

"I am obliged to wear flannel next my skin in the warmest weather;" "Never wear heavy garments from the hips;" "warm clothing saves energy;" "I have no fear of drafts;" "If I toast my feet when wet I never catch cold;" "Wet feet means a cold for me;" "wet feet never give me a cold;" "My head in a draft means a cold;" "I find myself much healthier wearing light cotton underwear even in winter."

STUDY AND WORK.

Number of hours of work daily. Most of the papers are not specific on this point. From one normal school the average amount of time spent in study is 4 hrs. outside of the classroom, laboratories and lectures which amounts to 4 or 5 hrs. daily. In another normal school the average time spent in the preparation of lessons is 6½ hrs.

Time of Study. The recitations and lectures coming mainly in the forenoon, throws the study hours into the afternoon and evening. There is expressed a decided preference for the morning hours for work. The forenoon is recommended as the best time for hard study, the afternoon for lighter work, recreation and exercise, the evening for work that does not over tax the eyes. There is much complaint of crowding heavy work into the night. Many are doing this or must abandon exercise and recreation in the afternoon.

Dangers from over-work. Three speak of the mental work being too long and difficult where one enters no complaint. "I fear a break-down;" "I am ruining my health;" "I am growing nervous;" "I'm so tired;" "Can't rest;" "Never get to do anything but study;" "so much study makes my head ache;" "have to do more than I ought;" "don't have time to eat;" "can't have time to exercise;" "too much work and I worry;" "have to study on a full meal;" "the work is too hard and long;" "too close application;" "too much night study." These statements are principally from young women in the normal schools. Many in two of these schools seriously object to the hurried lunch period.

Some who feel the work burdensome employ some safeguards as, "Won't study directly after meals or just before retiring;" "I must exercise and sleep;" "More out-door exercise would help my nervousness;" "must have one-half hour after each meal;" "I rest after school and take a nap;" "I study only in the day;" "I became ill and rested;" "exercise in the open air saves me;" "I do less and am more steady, over-work does not pay."

Proper position in reading and study. About half the number reporting give attention to the position of the body in mental work. "My shoulders have become round and my chest hollow from study;" "I study at the table with the head supported by the elbows. This keeps the shoulders up."

The following are a few of the statements as to the best time for study: "The hard work I set aside for morning;" "never study later than ten o'clock without feeling bad effects;" "in the evening I can accomplish little more than mechanical routine;" "I never write or work mentally at night;" "The earlier I get to work in the morning the better I can do;" "saved my health by changing late hours to morning hours of study;" "morning is the best time for study, afternoon next, night poorest."

M., 30. "I do not study late at night. I can do the same work in one-third the time in the morning."

M., 39. "Prefer to work mentally and physically early in the day. I believe late study hours to be very injurious. Those who study best in the evening do so from habit and from bad habit."

F., 40. "I can only do six hours of hard intellectual work a day. I find it best to divide the time morning and afternoon. I can never do my best at night. Monday is my best day, doubtless because of the rest on Sunday."

PROTECTION IN EPIDEMICS.

Many say they do nothing in times of epidemics to ward oft disease. The greater number give themselves special protection. Little milk and water are drunk and these are boiled. The general health is looked after, the most digestible and nourishing foods taken, much fresh, ripe fruit is eaten, the bowels kept open and care is given to letting air and sunshine into the living and sleeping rooms, and much exercise is taken in the open air. Some disinfect the clothing and house. Others gargle the throat with a mild germicide or breathe sulphur fumes.

A minister writes, "I try to keep the health of my family at the highest standard in times of epidemics;" a physician, "I have done nothing except to procure as far as possible pure milk and water for myself and family;" a teacher, "I take exercise, particularly at wood-sawing;" a university fellow, "I avoid exposure to the disease and gargle the throat with a germicide;" another physician, "I keep myself immune by taking plenty of fresh air and casting out fear."

QUACKS.

The next chapter, "Medicine and Quackery," will treat at some length, this section and number 4 of the questionnaire.

I am led to believe from my investigations among druggists, physicians and quacks that more intelligent people resort to quackery than the returns from the questionnaire indicate. All who report as having had such experience deplore it.

M., 21. "Have had experience with a quack optician through whom I almost lost my eyes. I am now only recovering."

A teacher says, "I paid $20.00 for an electric belt to induce sleep; wore it a while, thought I was a little better but soon threw it away."

The papers from Poland show much faith in quackery. The quack in Poland is usually some old woman herb doctor and the faith element undoubtedly enters into the real or supposed cures. The three following statements are from intelligent Poles, one being a medical student, another belonging to the nobility and has a deep interest in education and psychology.

F., 28. "Yes, quacks have helped my children in eczema and severe fevers. I have also read where an old woman by means of a prayer stopped blood flowing when doctors could not."

M., 21. "The doctors declared as a child I was an incurable consumptive. Mother took me to a woman who called herself an herb doctor. I took the medicine and got well to the great disappointment of physicians."

F., 24. "I myself have had no experience with quacks, but I have seen some marvellous cures by old women through drugs, baths, prayers, and rubbing with an egg. I saw childres, who, at their third year had not walked did walk and servants who were ill were helped in a few days."

PERSONAL REGIMEN, HOW INFLUENCED.

Personal illness as influencing resolves and practices. Nearly all say that, while sick, they resolved to live more hygienically when well again; but with most, their resolutions vanished with their pains. Some say they carried out their resolutions, but only after repeated attacks of illness.

"Was careful for a time, then broke;" "with typhoid fever

I resolved but broke;" "carried out my resolutions after repeated attacks;" "kept my resolves one week;" "kept my resolutions only when erysipelas had deprived me of my hair;" "dyspepsia has made me careful of food, neuralgia of clothing."

F., 40. "One spell of sickness resulted in a good resolution which I have kept—not to overwork. Keeping well, however, is a matter of habit rather than of particular resolution, carried out as a result of sickness."

Does one have to be sick to learn? About half who have been sick say "yes," the others "no," while, of all reporting, more than two to one say "no."

"I have always had to be sick to learn;" "some must be sick to learn, not all;" "I have derived great benefit from the ills of others;" "I appreciate health though I have always been well;" "to see others sick is enough to keep me straight;" "one can only appreciate health by being sick himself."

M., 46. "While I had youth and strength I could not realize the importance of health and did not until laid low."

M., 28. "One surely learns from experience, but it need not be personal necessarily. The sight of illness in others has often led me to attempt self improvement, as for instance round shoulders."

Your experiences others might profit from. "For health, fresh air and exercise and don't worry;" "never eat when fatigued;" "apples before going to bed;" "beware of constipation;" "take cold bath every morning:" "a pint of water before breakfast keeps off constipation;" "a cheerful disposition;" "deep breathing;" "exercise in the open air and sufficient sleep keeps me well without medical aid."

Benefit from counsel of others. Many say they have been benefited, while a great number say they have not.

"We only learn through experience;" "mother and friends have influenced me;" "I have derived help from two sources largely—observation of the ills of others and the advice of friends that know. The former has helped me more than the latter;" a physician writes, "I have derived little help so far as I can recall from the advice of others. I have usually gone contrary to their advice and acted on my knowledge of my own organism."

ROUGHING AND TOUGHENING.

The papers here show a wide range of answers, varying from an absolute "no" to just as positive "yes." There is many a "yes" and many a "no" in reservation with a "but" and "if," "and," "yet," "still," etc. There is a strong protest against constant care, over-anxiety, bundling-up, coddling, yet no one seems to advocate the exposure, coarse fare and hard life as in the training of the ancient Persian and Spartan youths, not even that urged by Locke.

Those who believe in roughing it. "Make use of all kinds of weather and exposure to become robust;" "it is nonsense to bundle up against wind and storm;" "mother never was careful with us children and we were always strong;" "I've tried roughing it and find it beneficial;" "roughing, the weather and coarse food make for health."

M., 25. Roughed it six years in the cattle business and have never been so well before or since."

M., 38. "The body ought to be taught to endure. Think confidence in it ought to be cultivated from childhood."

F., 19. I go out in all sorts of weather. Enjoy being out in the rain. I avoid riding unless absolutely necessary and have never felt any ill effects."

M., 21. "Children in their bringing up should be toughened so that they can endure cold, change of air. I have always had colds. Mother kept me too warm."

F., 19. "Mother used to bundle me up. I was always taking cold. Of late I wrap up but little and rarely have a cold. I know a family of children that rough it and are never sick."

Those who do not believe in roughing it. "Have tried roughing it only to bring on illness every time;" "no exposure for a person brought up as I have been;" "from experience I know it not wise to expose myself;" "one cannot be too cautious."

F., 45. "My experience in exposure, coarse fare, roughing it, treating health harshly tends to make me prematurely old and gray."

F., 35. "Have often tried 'the toughening act' only to bring on a spell of sickness. Defying precaution is not the secret of robust health."

M., 22. "There are those, who doubtless are the better off for hard fare and harsh treatment. As for me I prefer to give constant care to keeping far within the bounds of danger."

M., 21. "I can best answer the question by citing two cases I well know. Two young men went to college. One took the greatest care of his body, the other determined to toughen himself, refusing to wear an overcoat in the dead of winter and at other times insufficient clothing. The former is now a professor of physiology, the latter is now in the 'happy hunting grounds.'"

Those who believe in temperate course. "The personal equation must be considered;" "care but not coddling;" "keep within the bounds of common sense;" "discretion at all times;" "rough it but be well protected;" neither bottle up nor expose;" "rough it but not to the point of foolhardiness;" "the secret of health lies in a reasonable amount of exposure."

F., 24. "Constant care I find bad, but the toughening process is risky for delicate children and adults. The hygienic life is the best."

F., 40. "Neither the hardening process nor a constant solicitude about one's health; the latter seems as morbid as the former dangerous."

M., 33. "Much of the so called toughening is foolhardiness. On the other hand it is to be preferred to the puny hygiene which thinks of nothing but keeping well."

F., 20. "Have staid in doors to protect myself and caught cold;

have gone eight miles through the roughest weather and never felt better. I do not believe in little clothing. Had a schoolmate, whose father insisted on toughening her; would not let her wear flannel. She often came to school blue with cold and chattering teeth. She took quick consumption and died."

SEX HEALTH.

Only one hundred females and twenty-five males have written on this question. The meagerness of the reports is doubtless due to modesty, timidity, squeamishness, the dislike of having one's most private life inquired about and ignorance that there is a male sex health or rhythm. Those who have written have done so frankly; have spoken to the point and wholesomely.

Sex Regimen in the Female. Seventeen only out of the hundred are not obliged to give additional care to health at the menstrual period. These say they are as strong then as usual and need not modify their regular regimen. Of the eighty-three who must give special care, the following words and phrases are most frequently used in the reports: "rest," "more sleep," "little physical exercise," "avoidance of all strain," "lifting," "dancing," "running," "removal from all excitement," "but little mental exertion," "no irregularities," "greater care in diet," "clothing," "omission of cold bath," "endeavor to be free from constipation," "care against all exposure or drafts," "damp, cold rooms," "wet feet," "standing too much," "taking time to lie down frequently." "Never over-tax, nor weary;" "take much sleep with mild exercise;" "no violent exercise, no bath;" "do not wear corset, eat but little and drink hot water." "avoid excitement, fright and cold."

F., 24. "Rest during the period, no walks, no exercise. I have found it best to remain in bed two or three days."

F., 20. "At certain times I think it a duty to avoid hard physical and mental work and be careful about nervous strain and exposure. I have known nervous disturbances to result in years of worry and irregularity in health."

A minister writes, "My wife usually stays in bed the first day and is careful during the entire period not to expose herself to cold and dampness. She is training two daughters in the same way, keeping them from school and in bed for at least one day."

F., 28. "I must say too little heed is given to girls during puberty, when they need so much care. Girls and grown up women should remain in bed at least the first two days of the menstrual period; have special diet, no wine, no stimulants, read something quieting. I have used with good results milk, fruit, some vegetables, chicken, and cooling drinks. Girls should not be in school, nor do mental work at this time."

F., 38. Teacher in High School. "Having had no instruction, my first menstrual flow took me by surprise; was greatly frightened, feared I had hurt myself and yet through modesty and mystery I was afraid to speak to mother. It was March, a raw, cold day, with snow on the ground and ice floating in the creek, but I went down to it and washed my person and my clothing. I was greatly disturbed at the continued flow. I ran to a neighbor girl, a little older than I and told her what had happened. She told me what she knew. This removed me still farther from my mother. The consequences have been that I have scarcely had a real well day in twenty-five years and I was strong and hearty before. With all my suffering, which at times is excruciating, I have spent hundreds of dollars, hard earned, without any permanent results. A thousand times I have thought how much my good mother might have done for me by a few wholesome words, directing my attention to that which by nature is sure to come to every normal female. Mother was not ignorant, but timid."

This case shows the irreparable loss of health and happiness to thousands brought about by the ignorance, timidity, squeamishness or indifference of mothers in advising and training their daughters as regards the menstrual function, and it is just such parental neglect that affords opportunity for patent medicine and quackery.

Sex Regimen in the Male. The male sex regimen is different from that of the female. There is a sort of rhythm of periodic involuntary discharge of seminal fluid, the amount, regularity and frequency of which depends upon the individual, his general health, animality, climate, season of the year, occupation, food and drink, thoughts, leisure, exercise and recreation. Ignorance of this has been the cause of much worry, morbid fear and insanity, and has made thousands an easy prey to quacks, patent nostrums, advertising doctors and unscrupulous physicians. A robust, morally healthy young man, say eighteen years of age, has an occasional, nightly, involuntary emission, perhaps twice a month, possibly once a week. He does not understand it; thinks something wrong, grows fearful, reads "his case" in advertisements, hastens for help and explanation and not only are his fears corroborated, but greatly intensified, and he gladly submits himself to quackery.

A reputable physician gave me an account of two priests who came to him for advice. The young priest had been having nightly emissions that rhythmically came every ten days. He did not understand the law of his sex and was morally and spiritually disturbed. The old priest was sixty-eight years of age. He, too, was disturbed for he feared mental and physical decline as his involuntary emissions, which had occurred regularly twice a month throughout his life, had ceased. Both men were children of Nature, moral and conscientious, but subject to her laws.

The following statements are of interest, showing ignorance on the part of some of the sex-life and its importance to those who understand it:

M., 18. "I know nothing about the sexual organs."

M., 40. "I learned the boys' evil by a vile man suggesting it to me at the age of fifteen."

"Learned to masturbate at the age of ten from a company of boys older than I."

"I have erred not knowing the laws of my sex and shall never get over my mistakes."

"I learned the evil," says a great educator, "at fifteen, but had virtue to get control of myself ere long."

M., 45. A minister,—"Temperance in sex relations is, I believe, a great health preserver. More physical wrecks come from intemperance and abuse here than from any other cause."

M., 21. Student of Medicine,—"I have been tempted and tried, but to be sure men are to keep pure until marriage. This I am doing through exercise of will, work, good, moral society, having none other, music and art and not allowing myself to think on such evils."

M., 19. College student,—"I am positively convinced that dissipation of the sexual forces is a crime which cannot be justified under any circumstance. Perfect health cannot maintain where dissipation is practiced. Every bit of energy is needed. We can't afford to waste any."

M., 21. A teacher,—"Personal purity is a vital problem in a young man's life. I believe that children at the age of ten or twelve ought to be cautiously warned of the danger ahead. I know boys who have wrecked themselves at an early age simply through ignorance of the sexual organs and their use."

M., 46. A physician,—"The organs that give a being his sex constitute the electric plant of the body and this part above all others should be thoroughly understood by both young and old. Without a thorough knowledge of this plant the lights are apt to go out and then how great is that darkness!"

M., 26. University fellow,—"Every boy and girl ought to be taught at home and very early in their youth a knowledge of sex and reproduction, probably by means of the proper kind of books, for the child who feels like going to his parents with such matters is a *rara avis*, and as he is going to learn them, he should get them from eminently respectable sources."

M., 58. Eminent psychologist,—"I believe in temperance and moderation. Seminal fluid excessively discharged affects brain work. A young man should remain absolutely pure and intact until twenty-five or thirty when he should marry. What is sexual excess for one is temperance for another and *vice versa*. The sex relations should be rhythmical. We should follow nature. She is not ascetic, nor Tolstoïic, simply rhythmical."

M., 38. A physician,—"It is a moral certainty that much the larger half of our boys and girls learn the habit of masturbation, and when once learned it is practically impossible to stop it before adult life. So the most that can be done in the meantime, is to keep them busy, teach self-control, withhold all stimulating foods, drinks, exciting entertainments, lewd pictures, all suggestive reading and mental imagery."

M., 26. University fellow and missionary,—"Daily cold bath, bathing organs, back and groin with cold water after warm bath, avoidance of constipation and over exhaustion of the nervous system, exercise, mental occupation and control of attention and refusal to worry about what may happen in the night when the will is inactive have helped me. I have established the habit of awakening and getting up when impure thoughts arise and this has greatly helped me. I have learned these things after long and painful experience. I wish I might have been told some of them when a boy and thus have avoided many mistakes and worry."

RELATION OF ENVIRONMENT AND MENTAL STATES TO HEALTH.

The papers are practically unanimous in saying that health is largely dependent upon environment and the mental states. Four only speak negatively and state they have known persons having the best of environment with much ill-health and *vice versa*. Their statements, however, only prove and emphasize the general rule.

The following are a few of the characteristic expressions: "My mental states and consequently my health are largely influenced by my surroundings;" "bad surroundings produce a morbidness in me and so act upon my health;" "when under mental strain I do not feel well;" "a morbid mind should have a bright environment;" "my mental states and my health are largely controlled by my environment;" "cheerful surroundings make a cheerful mind and this the health.

F., 21. "I get the blues when externals are not right. My appetite fails me, my body is depressed, I can only tone up by joining a crowd of jolly girls. This I do whenever the blues appear."

F., 21. "I credit much of my good health to a very cheerful home atmosphere. Ten years ago I determined to make the whole family laugh during every meal. I have not fully lived up to this resolution but still our meal times usually are jolly times."

THE IDEAL LIFE.

The answers to this, the final question of the questionnaire "keeping well" is, in a measure, a general summary of much that has been given under the leading topics considered. In sketching an ideal life many of the writers have placed much emphasis on food, clothing, sleep, work, exercise, recreation, home, friends and health.

Food. The food is to be plain, nutritious, country-fare, well-cooked, wholesome and easily digested. Little mention is made of meat; sweets and much pastry are to be avoided; fruit and vegetables are to find a prominent place in the dietary. There is to be plenty of food, but eaten in moderation.

Clothing. Rich and costly apparel is not desired. The characteristic qualifying terms are "neat," "warm," "comfortable," "clean." The clothing is to be selected with great taste; is to be worn loose but well fitting.

Sleep. Many express a desire for more sleep and rest. "More sleep," "restful sleep," "sleep as much as I want," "get up when I feel like doing so" are phrases often used. None make mention of less than eight hours, the majority more. The average amount would not be far from nine hours;

the time from 9 P. M. to 6 A. M., or 10 to 6 or 10 to 7. The hot bath is frequently spoken of for the bed time; the cold bath on getting up.

Work. None want an inactive life. Some do not speak of any specific kind of work; the majority do. Though no mention is made of wanting to get away from work and responsibility, it is evident that many feel that they are overworked. There is manifest a decided tendency to worry. Many crave a moderate amount of congenial employment, work in which they might become permanently interested and not be drudgery to them. More freedom is desired. They wish to be in circumstances where they will not be compelled to work when physically or mentally unfit. Many express themselves as not having time for meals, sleep, exercise and recreation. They ask only for a reasonable amount of time for these necessities. Some want to do all mental work; most desire physical and mental. Morning is the time for work; afternoon for exercise and recreation; evening for reading, music, friends and society. The spirit of the papers is that one should work six hours a day exclusive of reading.

Exercise. No part of the ideal life is dwelt upon more than exercise except health. This is due to the fact of work consuming time which should be devoted to exercise and recreation and because intelligent people clearly see the relations of playful effort and mental relaxation to health. Eat one must, if ever so fast; sleep one must, even though the period be cut short, but exercise and recreation can be set aside without immediate ill effects. Here, too, only the free, open air exercises are emphasized. Apparatus, formal exercise as physical culture and the gymnasium have no place. Plays, games, brisk walks, strolls, riding, driving, swimming, skating, rowing, tennis and dancing are often mentioned.

Recreation. Travel has first place. Then follow reading, theatre, music, games and social pleasures. Great desire is expressed for freedom in recreation; occasionally leading a sort of gypsy-life, abandon, let-down, a mere vegetable existence,—the joys that spring from hedging one's self about, dressing as he chooses, eating and doing just as he pleases, a life totally in the privacy of the self, enjoyment of a secluded wallow with no eye to stare at, no tongue to tell, the primitive savage-hour,—a total relief from work, worry and care, an evening-up process.

Home. Many speak of the home and homestead. All desire that the home (house) shall be large and old, rich in associations and memory, in an open, airy, roomy place not far from the city, but near to the mountains, ocean, lake, river, woods and meadows, with large expanse of lawn, studded with trees. Here many evenings are to be spent in quiet, with the family or in reading. Now and then congenial friends are to come. There shall be an occasional dinner party and a trip into the city to theatre, concert or lecture.

Friends. Some want but few friends, these to be wholly congenial. Others will be satisfied only with a host of friends. Some wish their friends to visit them occasionally. Others desire them to come often. One young woman says, "If I could only have all the dinner parties for my friends I desire, this would be my ideal life." Here it may be mentioned that many express a wish for wealth, not for their own selfish ends but that they might be at liberty to do good in the world; care for friends, provide for father and mother, help the poor, go into the slums, relieve the sick, sad and distressed.

Health. In the ideal life, health is the one desideratum. Compared with the wish for real, abiding health, every other is pale. Here again overwork, worry, ailment, lack of proper food, sufficient amount of sleep, exercise and leisure thrust the topic of health into the foreground. We shall best catch the spirit of the desire for health from a few of the typical statements: "To feel well all the year round and always be happy;" "no distractions of mind, no worry;" "heart and spirit for life;" "to die before I fail to live;" "no depressions, nothing to mar;" "not over-work, but work when I feel like it;" "sound mind and body with power of accommodation;" "complete relaxation once a day;" "only to be strong and well;" "regularity in health;" "a healthy life not an artificial one."

F., 18. "My ideal life would be a life in which a person can without much precaution and safe-guarding keep perfectly well, never be bothered by headaches, backaches, colds and sleeplessness, feel rested after sleeping and be able to sleep after a day's work, eat and drink what one likes."

F., 24. "If my sole aim were to keep at the very top of my condition and live as long as possible, I should want to sleep eight or more hours every night, in the morning feel rested and ready for the day's work, have time for much exercise and fresh air, have a certain time for everything, be free from all worry, discontent and jealousy."

M., 33. "I look at health as a matter of wholeness, completeness and therefore the highest end of life. To be healthy and strong is to be wise, because only strong men and women are able to do the work and live the life they should. To teach men and women and our youths so they will know themselves and definitely find out just how they can get the most work out of themselves with the greatest economy is the greatest teaching it seems to me. How this can best be done, I cannot even make a guess."

II.

MEDICINE AND QUACKERY.

The prevalence of advertising doctors and quackery, of morbid fear of disease, the strong tendency to resort to medicine for health, especially to "patents" as "cure-alls," have prompted the following investigations among druggists and physicians.

The request, "Mention any kind of medicine which you have used," of the questionnaire "Keeping Well" has called forth many such answers as the following, which is from a female teacher of twenty, who fears dyspepsia.

> "I have taken many prescriptions from doctors, Hood's Sarsaparilla, Peruna, Ayer's Cherry Pectoral, Radway's Ready Relief, Thomas' Pine Tree Tar, Scott's Emulsion, Little Liver Pills, Garfield Tea, Brown's Laxative, Cascarets, Pepto Mangan, Ripan's Tablets, Lady Webster's Pills, Frog-in-the-Throat, codliver oil, ipecac, quinine, calomel, digitalis, nitre, magnesia, peppermint, soda tablets, balsam apple and whiskey, hot whiskey and lemon, soda mints, menthol tablets, and have used various plasters, salves, ointments, creams and poultices."

The following questionnaire was submitted to druggists:

1. Have patent medicines any merit?
2. If not, what sells them?
    (a) Is it because they are regarded cheap?
    (b) Lack of faith in the regular practitioner?
    (c) Or because of advertising?
3. Who buy patent medicine?
    (a) The ignorant, or intelligent; the poor or the rich?
    (b) Which sex buys the more?
    (c) At what period of life principally?
4. What "patents" are largely bought? for what ailments?
5. Do physicians make use of patent medicines?
6. What is your estimate of the work of the average physician?
7. What do you know of the advertising doctor and quack?
8. What is your opinion of the drug business as it is conducted to-day?
9. Do people take too much or too little medicine?
10. How are the people to attain unto a greater degree of health?

I have made personal visits to thirty-five druggists, wholesale and retail, doing business in towns and cities in the eastern and middle sections of the United States. The proprietors themselves were sought,—men who have been in business from ten to forty-five years, the average length of service being twenty-five years. The suburban and the down-town druggists, those doing business in the richer districts as well as those in the poorer quarters were visited. All cheerfully answered the questionnaire and often entered into confidential conversation, only requesting that their names be not given to the public, as their business is their "bread and butter." I have also interviewed a number of reputable physicians, several pharmaceutical chemists, and consulted advertising doctors and travelling quacks.

Have patent medicines any merit? The majority of the druggists answered in about these words, "They absolutely have no merit." Some said, "They not only have no merit, but are positively harmful." A few said, "Whatever good they possess lies in the alcohol they contain." I failed to find a druggist that regards patent medicines as having merit. "It's the biggest fake in America," was an oft-used expression. Two did say if there be an occasional patent that has any merit, it is some old and well-known remedy put up in new form, colored, and flavored to conceal the ingredients and sold under a strange or attractive name at a ten-fold price.

Druggists fear the secrecy of patent medicine. They frequently spoke of the large amount of alcohol, cocaine, opium or morphine patents are likely to contain; one never knows what he is taking. A druggist old in the profession said, "The best clerk I ever had took from my shelves a patent medicine for catarrh. It contained cocaine and ruined his life." I have found a few expensive, harmless "patents," one being nearly pure glucose, which sells for one dollar a bottle and can be put up for five cents; others, largely colored and flavored water. There is one of water and containing a trace of hydrochloric acid, hundreds of thousands of bottles of it are being sold, much of which if taken will ruin the enamel of the teeth and eat the lining of the stomach, yet many testify to its merits and several times I have been asked by intelligent people if it is not a really good medicine. Nearly all druggists have sold it and say they never had so great a seller nor handled so great a fake. There is a harmless flavored decoction of oats, widely sold under the name of the supposed discoverer of this great tonic and purported builder of nerves.

The Massachusetts Board of Health has found 41.6% of alcohol in a medicine advertised as "A purely vegetable extract" and as a "great help to inebriates struggling to reform." This Board says of a certain essence, "A more insidious and dangerous fraud can scarcely be imagined, especially when administered as this is recommended for the cure of inebriety or the opium habit." The Western druggist says of the same essence, "It is widely advertised as a wonderful nerve tonic, containing neither alcohol nor harmful ingredients, but is, in fact, loaded with 35% of alcohol and two grains of morphine to each bottle. A more diabolical concoction could hardly be devised."

Since methyl or wood alcohol has been deodorized it is often the chief menstruum for patent medicines. In 1902, the Board of Health of New York city found 40 out of 215 drug stores substituting wood for grain alcohol in their pharmaceutical compounding. Paregoric, liniments, spirits of ammonia, Jamaica ginger, spirits of camphor, bay rum, witch hazel, colognes, the culinary essences, cheap whisky, many medicines and foods contain much wood alcohol. Dr. Warren, the pure food commissioner of Pa., found 95% of the samples of whisky containing it, some of them as much as 75%. Twenty-five persons died of drinking whisky containing it last year, in a certain district in New York city. Wood alcohol is but one-fifth as expensive as grain alcohol, which accounts for its large use.

It is not known by the laity, indeed by the medical profession at large, how dangerous is the use of wood alcohol. About 50% of the people are susceptible to its evil influences, depending upon the state of the stomach, nerves and general health. Some are so susceptible that inhaling it, or bathing any part of the body with it poisons. Up to 1904 Drs. Buller and Wood reported 153 cases of blindness and 122 deaths from its use. These doctors, who have made a careful study of wood alcohol and its evils, say, "Certainly few members of the medical profession and practically no one of the general public, are as yet aware that methyl alcohol taken into the system in moderate or considerable quantity not infrequently causes death. More than this, the people are still less cognizant of the fact that a certain proportion of those who survive the poisonous effect of the drug are condemned ever afterward to the miseries of greatly impaired vision, and, indeed, not infrequently to absolute blindness." The report of the investigations of these physicians states, "There is hardly a liniment, an essence, an extract, or a bitters—hardly any nostrum or concoction, medical or domestic, in whose preparation alcohol is employed, that has not been or is not now, adulterated with this poison. We have within the past few months had several proprietary remedies, suspected to have produced blindness, carefully analyzed; they all contained wood alcohol."

There is the patent medicine "X" which has had enormous sales for many years through extensive, persistent and unique advertisment. The druggists insist that it has no merit but the bad gin it contains. "Our women," said a druggist, "have no scruples in taking this impure stuff under the guise of medicine. It is no good, and yet I had to order seven gross of it this morning." Another said, "I have been selling it for upwards of thirty years. I have sold it to hundreds of women, a dozen bottles or more to some, and I do not know a person it has helped in the least."

There is preparation "Y" whose sale is pushed to-day by active agents in every city and town in the United States and vast sums of money are being taken from the people, for it is an expensive and long drawn out treatment. According to the Western druggist this preparation is "a mixture of tannin, opium and cocoa butter put up in capsules and sold for a cure of all female diseases." Its manufacturers, one of them with "M. D." following his name, have published a large book, written in popular style, containing just enough science to deceive the public at large. Here, too, it is just that "scientific pose" now so largely made use of by quacks the more readily to deceive the great, credulous mass. Thirty or forty years ago, the patent medicines usually were wonderful discoveries made among the Indians, strange peoples in far distant lands. Now eminent scientists discover them after years of experimentation in the laboratories. Just so with "Y." I have known some people of irregular habits who said they were benefited by a six months' "course" of "Y," but their improvement came from their faith, and particularly the regimen, as prescribed, dietetics, rest, recreation, and exercise, and especially the systematic rubbing and massaging, which commonsense, and every-day hygiene insist upon free of charge.

There is "Z," said to be a college woman, and possessed of dramatic personality, who has little trouble in inducing women by the thousands to use her fifty specifics, which range as preventives and cures from freckles and pimples to consumption and Bright's disease. Here is a bit of her advertising:

> "It is a specific for every weakness to which woman is peculiarly susceptible from infancy to old age. It is an elixir of life at every stage of her earthly journey. It annihilates pain, banishes suffering, brings health, hope and ambition to all. It makes the sick well, the weak robust and the strong stronger. It is invincible. It is woman's long-sought, never-failing panacea."

"Z" makes a face lotion which is retailed at $1.50 for near a half ounce. As good an article, possibly better, can be made for from five to eight cents.

The investigations show that three-fourths of the people buy patent medicines, more or less, and believe they are getting efficient medical services "at a bargain." "My store," said a druggist, "is crowded with women when I give away sample medicines or cut prices. They are anxious to buy and take any medicine if it can be bought at a reduced price." The Indiana pharmacist urges druggists to make their own "patents," saying, "Why pay $1.90 a doz. bottles for a cough syrup, when a better article containing no opium can be made for 46 cents a doz.? Why pay $8.00 for bitters when a better can be made for $2.25? Why pay $8.50 for a blood purifier generally made up of a solution of epsom salts, colored and flavored, when a really good thing can be made for $3.13 per doz. bottles? Why should not one make up his own kidney remedy at a cost of $1.77 a doz. bottles and thus afford a much better profit than W's nostrums and do the patient some good?" "Here is a medicine," said a druggist to me, "that sells for $1.50 a bottle. I have made a superior article for 18 cents a bottle and sold it at 35 cents, making nearly a profit of 100%."

All evidence from druggists, chemists, physicians and medical journals amasses itself to prove that patent medicines are costly and dangerous to body, mind, life and morals and that their producers are deceivers and robbers.

What sells patent medicines? There was but one answer given by all druggists visited. "Patent medicines are sold wholly through the susceptibility of the people to advertisements." There is some lack of faith in the physician due to his incompetency, carelessness, failures and neglect of the poor, preferring to administer in more attractive quarters and particularly where his fees are sure and not long delayed. The element of expense, too, is considered. There are those who will pay twenty-five cents for tablets or a dollar for a bottle of medicine which will last ten days rather than pay for a prescription and its filling or one to three dollars for a visit from a physician. Then many women fear the publicity of going to a physician, and long delay a visit to him if they suspect an examination is necessary. So when a new medicine is cunningly advertised as curing upwards of half a hundred ailments and costing but one dollar a bottle, many are induced to buy. A Chinaman in "As a Chinaman Saw us," says, "No one profession demonstrates the abject credulity of the great mass of Americans as that of medicine. In no land under the sun are there so many ignorant, blatant fakirs preying on the people. They are so easily led that the most impossible person if he be a good talker can, by the use of money and audacity, secure a following to drink his salt-water, paying a dollar a bottle for it and singing his praises."

It is necessary to work incessantly upon the credulity and fears of the people through advertising to sell patent medicine. The average life of a "patent" is three years. It will run its course and die unless heavily advertised. Some firms have spent annually a million dollars to keep up their sales. There is a bitters, made years ago in a prohibition State to evade the laws, which has had a long life without extensive advertising, but this has been due to the 44.3% of alcohol it contains. Recently a successful druggist said to me, "If you want to get rich quickly, take five thousand dollars with a little business sense and push and through judicious advertising of a nostrum ring the most significant changes on F-E-A-R. The people are so fearful of disease and believe so much in medicine that one can induce them to buy any manner of preparation. It is no trouble to get their money if you know how to play upon their little ailments and trifling indispositions.''

''Many people have the medicine habit and it is about the worst habit I know,'' said an old druggist. ''Patent medicine,'' he continued, ''is an unadulterated humbug.'' I said, ''You are to-day making special display of blood purifier and catarrh cure in your windows and have big advertisements in the morning papers.'' ''Well, what are we to do,'' he said, ''people will buy medicine. I have told many a one that he did not need it, only to have him go elsewhere and buy.''

Often a week's daily advertising of a medicine will bring enormous sales. Not long ago, advertising sold sixty thousand bottles of a certain ''patent'' in a western city in a few weeks and the medicine did not contain a single ingredient as advertised. The business manager of a large daily, awhile since told a druggist to get ready for large sales on a ''patent'' as the paper had begun a series of flaming advertisements. ''And sure enough,'' the druggist remarked, ''the sales soon began and have been enormous.'' Let but a board of health or a physician announce that a few germs of a disease have been found and a rush is made for medicine.

It is fear and the reading of ourselves into advertisements that sell patent medicine. A physician related that in a class of sixty medical students attending a clinic on heart trouble, twenty-five of the students had fears of heart weakness and privately consulted the demonstrator after the clinic. Examination showed not a single case of serious trouble. Many a student out of extreme susceptibility is forced to abandon a medical career. History is full of epidemics of suggestibility,—panics at fires, financial panics, mobs, intense fear during plagues; pilgrimages, the Crusades, the Flagellant and Dancing manias, witchcraft, tulipomania, Mississippi Scheme, South Sea Bubble; the Woman's Crusade in 1873, the sweeping religious revivals from time to time, Millerism and the like. All have sprung from our susceptibility to rumor, report and fear; the spirit of imitation and the strong tendency to move en masse. A man of 28 writes, ''The patent medicine man recognizes the influence of mind upon body. For a person afflicted in any way to be eternally brought face to face with his afflictions and in an environment always crossing the bridge before getting to it naturally aggravates his disease.'' It is easy to read one's self into the ailments vividly described in the advertisement of a medicine. This done, he is well on the road to buying and taking. Disease is mentally catching. Last year a community had liver trouble; this year it is stomach; next year something else. ''Did you say,'' I said to a druggist, ''that your city has kidney trouble this season?" "No," he replied, "I said, kidney suggestion." "Due to what?" I asked. "To the advertisement of Swamp Root and the testimony of two or three men who think Swamp Root is helping them."

The name of a medicine helps or hinders its sale, and care is bestowed in its selection. The name must be short, easily catching the eye and remembered; euphonious, onomatopoetic, alliterative; bizarre, having something of the Indian or oriental cult about it, which haunts, lays hold and will not let go; suggestive of relief, cure, hope and be apparently scientific. The following will illustrate the psychological and rhetorical principle in selecting patent medicine names: "Pink Pills for Pale People," "Radway's Ready Relief," "Vegetine," "Vinol," "Viavi," "Terraline," "Kaskine," "Kodol," "Bardoma," "Comatone," "Nervura," "Hyomei," "Matico," "Pascola," "Oakolo," "Peptiron," "Hepa-Rena," "Omega," "St. Jacob's Oil," "Good Samaritan Liniment," "Balm of Gilead," "Bloom of Youth," "Old Doctor Wessen's Angel of Peace and Solace of Life." Take the last named: The word "doctor" to many is talismanic; "old doctor" is more so; "Wessen" is rhythmic, euphonious and easily pronounced. So the phrase "Old Doctor Wessen" is an attractive one and when joined to "Angel of Peace and Solace of Life," the title, is interesting, suggestive, sympathetic, already healing or soothing to those who feel driven to medicine of some sort.

There is absolutely no dependence to be placed in the testimony of the merits of patent medicine, notwithstanding that some very good people conscientiously testify. When the matter is traced down the testimony is due to ignorance, faith, temporary exhilaration from the gin or stimulating drug in the mixture; then many people are greatly pleased to have their words and pictures before the public; others easily commend through a gift of half a dozen bottles and not infrequently people of some little rank and office testify through the offer of a good, big sum of money. The manufacturers often say, "We have the *bona fide* testimonials. Any one disbelieving call and examine for themselves." No one needs to doubt these words. It matters not whether the makers of patent medicine have or have not the "original" testimonials. The matter stands unchanged.

Who buy patent medicine? The sales, by no means, are confined to the poor and ignorant. The rich and intelligent buy much. "All classes buy of me, the rich as well as the poor." "It is surprising how many rich buy patent medicine." "All take it, the poor, the rich, the ignorant and the most intelligent." "All classes buy from me, but the ignorant and poor and middle classes buy most." "The ministers of the city are among my best patent medicine customers." "The educated and reading public buy most of me for they read the newspapers." "The laboring classes buy most." "Those who have most money buy least." "The country is best for my patent medicine trade. The country people have leisure to dwell upon the patent medicine advertisements." "A rich and successful business man has paid me $85.00 the past two years for patent medicine."

Which sex buys the more? The evidence is conclusive that women buy more patent medicine, more medicine of all kinds, than men. However, the sales are not confined to the one sex. I have found men upwards of seventy trying "to renew youth" by taking a "highly advertised patent." Six druggists report that at least 75% of all patent medicine is taken by women. "Women buy most patent medicine. They are more easily influenced by what they read. They want, too, the novel, striking, love change and are so gullible." "Women, by far, buy the most. They believe what they read and love experiment." "Women are more diseased, more credulous. It is harder to induce men." "Men come to me to buy patent medicine largely for venereal diseases." "Women buy the more for they pore over advertisements, while their husbands read the news." In an hour's interview with a druggist four men bought "patents" for venereal disorders. However, in my visits to drug stores I counted five women to a man buying medicine.

Woman is more susceptible to impressions than man; is more imaginative, is proner to exaggerate her ailments; reads her complaints into advertisements. Our manners and customs have made her weaker. She is housed up, takes little out-door exercise and broods over her indispositions. Then, too, through lack of money she is obliged often to resort to cheap medical service and patent medicine. Then, too, as already said, she dislikes the publicity of going to a physician and recoils from personal examination.

At what period of life is patent medicine used principally? Parents dose even their infants and children with it. Young women in the teens frequently use great quantities for menstrual irregularities and young men for the evils of masturbation. But the real patent medicine period sets in about 28 or 30 and lasts until 55, or more particularly the period extends from 40 to 50, or during middle life. Approaching 40, hereditary taints, earlier indiscretions, over exertion of mind or body appear. Kidney trouble in men, nervousness and the climacteric in women and sexual derangements in both. By 40 many have reached their highest efficiency. An effort is made to sustain their failing vigor and restore what now they are becoming conscious of as lost. "The medicine period is over 40 yrs. rather than under." "About 45." "From 35 to 50." "I sell masturbation remedies from 20 to 30, but the ordinary patent medicines are sold in middle life to old age." "I sell most to men and women about 40, for it is then they begin to fail." "I sell Lydia Pinkham to those who are from 16 to 40; the various patents for Bright's disease from 40 to 55."

What medicines are largely bought and for what ailments? Coughs, colds, consumption, the blood, kidneys, masturbation, venereal troubles, nervous affections, female complaints, catarrh, liver and stomach, general systemic debility seek relief in patent medicine. As to the medicine taken much depends upon the efficiency of the advertising. Then medicines have their "day," season and style. They come and go as marbles, rope-skipping and other children's games. Then there are waves of influenzas, a "bacillus scare," the appearance of an "officed" or street haranguing quack, who is on the alert for the tendon Achilles of society and knows the vulnerability of man.

Do physicians make use of patent medicine? One-third of the druggists visited stated that the physicians that deal with them make more or less use of patent medicine. All, however, emphasized the fact that the majority rely almost wholly upon the pharmaceutical compounds. Six druggists said physicians buy "patents" of them, change the label, or put the medicine into their own bottles under their labels. "Here," said one, "are half a dozen bottles whose wrappers have been broken by physicians." "Step here," said another, "if you doubt that physicians are giving patent medicines." I did so and found several bottles at the back of the shelf, whose contents, —blood purifier, tonics and kidney remedies, had been partly taken out. A druggist handed me two bottles saying, "A physician has taken a part of these, has paid me for all and is at liberty to come and get the remainder." "Physicians buy patents of me and give them to their patients as their own preparations." It may be said that the physician generally frowns heavily upon "patents," compounds little himself or has his druggist do it, but resorts to the compounds sent out by the pharmaceutical houses. A number of druggists bring this charge,—Physicians are mere dispensers, they neither know what they give, nor the properties and effects of the medicines they administer. One doing a thriving wholesale and retail business stated, "Yes, physicians give patent medicine and know very little of the pharmaceutical compounds, which are close kin to patents, and in many cases just as bad. They are often kept secret and are not true to formula, as my chemists have shown from time to time. The physician frequently does not know what he is giving. It is not infrequently hit and miss with him as in diagnosing diseases. Physicians are as gullible as the laity. A live up-to-date agent of a compounding house can sell them most anything, as our full shelves of this sort of stuff show. These agents are constantly offering something new and changing their compounds in the face of the fact that there are but six or seven, at most ten medicines whose properties and their effects on the body are known." A number of druggists expressed the same opinion of the proprietary compounds, strongly emphasizing that they are not always true to formula, or the formula is not complete. Several stated that too many physicians are influenced by the agents sent out by the pharmaceutical firms. It appears that as the commencement season of the medical institution approaches many agents settle down near by and the young doctors "are promised," and often receive a well-filled medicine case of samples. However, it should not be forgotten in considering the attitude of the druggists toward the compounding houses, that the former have been deprived of their art and profits by the latter and a friendly feeling could hardly be expected to exist.

What is your estimate of the work of the average physician? According to the druggists the average physician is incompetent, neither knows disease nor medicine; neither the science nor the art of his so-called profession; has little interest in his work other than a commercial one; will stoop to any practice for money and the drug business is being constantly lowered by his demands. Here again Veresaeff's estimate of the physician is recalled. "There are shoals of excellent theorists and genuinely scientific medical men who are not worth a brass farthing in actual practice. There are as few real physicians in the world as there are poets. The ordinary human doctor is an absurdity." A pharmaceutical chemist said, "There are not six physicians of the two hundred and fifty in this city into whose care I should be willing to entrust my health or that of any member of my family." "Our doctors," remarked a druggist, "cannot tell smallpox from scarlet fever and measles. This has been demonstrated here within a month. They are an incompetent set." A pharmacist remarked, "A few days since a physician, doctoring in the best part of this city, sent to me four different prescriptions, each containing a deadly poison, all to be given to a little girl one morning. I telephoned him asking if he knew what he had done. He replied that he had got mixed up and did not know that he was prescribing so much poison." Billroth says, "Our progress is over mountains of corpses;" Magendi states, "Medical science has been enriched chiefly through its losses;" Veresaeff, "How many ruined lives lie in the wake of every doctor! In this terrible science of ours it is impossible to step without stumbling against living man. In venerology crime stains every step made by the science."

There are those who think the therapeutical art has improved little over that of Hippocrates and Galen, at least its progress has not been commensurate with the other sciences and arts, has not kept pace with anatomy and physiology. It ought not to be overlooked that disease has grown complex with civilization. Climate, peoples, manners and customs have changed. We are no longer simply Grecian or Roman, but cosmopolitan and so, in a sense, our diseases. With the evolution of the race in its varied civilizations, we shall expect new and complicated disease forms to arise. It is believed, however, that the medical profession is weak on the side of mental therapeutics. By this is not meant exactly mind cure, faith healing and the like, but scientific mental law applied in the healing art. All great physicians, from Hippocrates down, have made practical use of it. The following statement from a man of forty-one illustrates what is meant: "When sixteen I got the notion I should die of consumption within a few years. I became despondent. My mind was constantly on my breast and lungs. I lay awake night after night with the words 'die of consumption' ringing in my ears. There came to be a heaviness, a sluggishness, a sort of deadness in my breast. One day the family physician, a jolly, common-sense man called. 'What 's the matter, John?' he asked. 'Nothing,' I replied. 'Yes, there is,' he said, laughing. 'The day is fine, I 've a little spare time, let 's go for a walk.' This wholesome invitation raised my spirits. He somehow got a hold on me and I unbosomed my secret fears. Whereupon he said, 'See here, I 've lived long enough to know there 's no consumption ailing you. It 's all in your mind, get it out. You are not extremely wide chested but your chest (unbuttoning my vest) is deeper than the average and has good form and these are important. So just throw your consumption away.' I did so, and from that moment the load was lifted and I soon felt a newness in life, and have never had any lung trouble. Yet had I gone on in my obsessional mood, I should never have reached my majority."

Dr. Putnam says, "We can hardly treat a patient, no matter with what he may be suffering, without having to reckon on the vast and complex part which his mental attitude will play in controlling the result. In many instances, indeed, the physician's success depends upon the skill with which he makes this estimate. Yet how rarely is it systematically and consciously made under the guidance of a definite principle and how gladly would most physicians crowd out of sight the necessity of making it at all.'' It is not expected that a science will make use of amulets and the ''good breath'' of the Turkish hadja, but all such means employed in curing disease are worthy of study by the honest, sincere physician, as touching as yet an unexplored region in human nature.

Rabelais realized the influence of story and conversation in therapeutical art. A year and a half after graduating in medicine from the University of Montpelier he published his ''Chroniques Guargantuine,'' which, notwithstanding his fine anatomical demonstrations, and work on the circulation of the blood, which, indirectly at least, stimulated Harvey to his epoch-making discovery in the next century, proved to be of the greatest importance for personal hygiene and health. He wrote concerning his book ''My mind is able to choose no other theme seeing the sorrow which undermines and consumes you.'' He stated he had not written for glory but ''to cheer and comfort men and remove them from their afflictions.'' Rabelais's wit, laugh and ludicrous stories, here and there too coarse for our time, were for him and his day, monk and priest as he was, of far more practical value in alleviating the sorrows and sickness of humanity than prayers, fasts, vigils and sermons. He recognized that fear and worry are the world's great maladies, and in all his works we find him preaching a new evangel: ''Live happily and be ye well.''

What do you know of the advertising doctor and the quack? Many a physician through his science and practice having come to know the weaker side of humanity, and desirous of making money faster than the opportunities of the profession allow, resorts to advertising or making nostrums. I know a physician who, a few years ago, was doing a good work in a small town, is to-day advertising and making a ''patent'' in a city. A druggist says a travelling physician comes to his city and carries away from $4,000 to $10,000 twice a year, while the best established practitioner does well to make $4,000 a year. Another said that he had a classmate who left the profession after two years to write endorsements and advertisements for a patent medicine firm at a salary of $12,000, and has been with the firm twenty years, and yet recently said he would not give a bottle of champagne for all the medicine they manufacture. A pharmacist told me of a medical friend who had a fine practice and good income, but went into ''lost manhood'' advertising and is now making $40,000 a year from a western city and is establishing three branch offices in other cities. Champ S. Andrews, counsel for the New York Medical Society, says: ''I am reliably informed that an institution advertising 'men's diseases only' made over $200,000 in 1904.

In some cases patients were frightened into thinking they had loathsome diseases and paid a fee as high as $2,000 for a few treatments. I know several such instances.'' A druggist said to me, ''You would be greatly surprised to know how many people go to the travelling physician, paying as much as $100.00, for a little treatment.'' Another reports that a certain travelling specialist is giving the women who flock to him for treatment little else than morphine. A man of 40 writes me: ''I feared sexual weakness. I read the cures of an 'advertiser.' I wrote him and he encouraged me to take treatment. I did, paying him $50.00 down. Little later I paid him $50.00 more. This while I was teaching school at $25.00 a month, and I did not get a copper's benefit.'' Another writes, ''I paid a widely advertising company $75.00 and received absolutely nothing in return.'' I was lately in a college town where a firm advertising ''for men only'' had sent seventy-five cases of medicine C. O. D. to college young men. Only a few took the medicine from the express company. The firm was notified, but left the medicine with the express company which threw it out. The names of the students had doubtless been taken from the college catalogue.

All evidence goes to show that the advertising doctor is flourishing and is steadily on the increase. Physicians state that comparatively few men having private diseases come to them. More resort to the druggist, but the majority seek assistance of the travelling doctor and 'advertiser,' who are successful in playing upon the whole gamut of fears and succeed in robbing thousands who have no sex ailments. The newspapers are accomplices in all this nefarious work. Recently one of the leading dailies had six full columns on one page, besides the scattered notices, devoted to doctors advertising 'lost manhood cures.' The Medical News of New York City says, ''The modern charlatan could not exist without publicity given his advertisements by the press. If our New York papers would refuse advertisements for the sale of drugs for a criminal purpose, illegal lying-in establishments and the distressing advertisements for the sale of the so-called specialists for diseases of men only, it would not be difficult to rid the community of the chief offenders. These vicious advertising charlatans draw their recruits from innocent victims attracted by the advertisements unblushingly received by many New York papers.''

Some years ago a blatant quack, but a genius for getting the confidence of the people, came into the town where the writer was principal of schools. Two weeks before his coming he advertised as follows through large posters. ''The wonder mind healer and health restorer, Dr. ——, will visit your town. It is seldom I stop at so small a place, but I am on my way to the city. I only invite sick people to call upon me. I have no time to spend upon the well. I feel it my mission to relieve the suffering. The worst cases of all diseases shortly and permanently cured. Let there be no delay in calling upon me as soon as I reach your town.'' And there was no delay. It seemed as if three-fourths of the people were convinced of serious illness before he left. He 'read their heads' that he might be able the better to diagnose ailments. He had the faculty to tell every one, whose head he examined, just what the patient delighted to hear. He astonished the country people with his great glass percolator, a big funnel standing four feet high, stuffed with chopped-up clover, catnip and hoarhound, slowly dripping out the dense-black cure-all. The sight of the wonderful instrument and its product was well-nigh sufficient to cure the onlooker. He sold the medicine 'in the dry' for twenty-five cents a package, or one dollar a bottle in liquid form, triple strength from the percolator. Most took the 'triple strength.' He also had an ointment that 'induced great sexual strength.' There were two grades of this: No. 1, was five dollars, No. 2, double strength and never-failing, ten dollars. Many took the 'double strength.' This ointment when analyzed was found to be vaseline with a trace of carbolic acid. The 'double strength' had a little more of the carbolic acid in it.

What is your opinion of the drug business as it is conducted to-day? Of the thirty-five druggists interviewed not one is satisfied with the business and not infrequently distaste and contempt were expressed for it. The older druggists say the business is no longer so clean nor professional as it used to be. The younger men have expected to find the work more scientific and remunerative and are disappointed in both. The pharmaceutical firms are doing much of the compounding and the druggist is deprived of his science and art as well as of profits. All complain that the work is largely that of mere clerking, selling patent medicines, standing at the nod and beck of the physician and having few professional opportunities. Then many have come to feel that much of the drug business bears an immoral stamp. To live at all, some evade the liquor law, advocate the taking of much medicine, when they have but little faith in drugs. Many remarked disparagingly on the great number of calls for preventives of conception from all classes, young and old, married and single. I was shown not fewer than six mechanical appliances for the prevention of conception, to say nothing of the great variety of pills, tablets and liquids for this purpose, on the market. Women send their servants or go themselves and purchase these preventives and do so unblushingly, All this the honest druggist frowns upon, but says the people and physicians force it on him.

Do people take too much or too little medicine? There was but one answer, "Too much medicine is taken." Many people are slaves to medicine. It was strongly emphasized that the people believe far more in the efficacy of medicine than druggist or physician. It was pointed out that many are ill because of the amount of medicine taken. It is evident that the best physicians do not drug their patients. It is only the mediocre doctor, the druggist, advertiser, quack and patent medicine manufacturer that insists on administering much medicine, the first often out of ignorance or to satisfy the whims of the patient, the others for profit.

How are the people to attain unto a greater degree of health? The following statements were invariably called out by the question: Take medicine only when needed and then never patent, but only under the prescription of the most competent physician. To be healthy, be moral, temperate and regular in sex habits. Eat less and plainer food. Exercise much in the open air. Occupy the mind with hard work, for systematic work never kills. It is the irregularities, the excesses and immoralities that do this.

III.

THE EMOTIONS AND HEALTH.

Pain and Pleasure. Pain arises from the organism's attempt to adjust itself to new environment. It ceases when the adjustment has been made. If the adjustment cannot be made, pain preys upon the vitality of the organism and when this has been consumed ends in death. Pleasures are heightened in contrast with pain. The hero never wearies of recounting great battles fought. Biologically through the principle of the survival of the fittest, pain has, in a sense, made what health we possess. There are not wanting those who advocate a more intense life-struggle in the interests of a sturdier race. Veresaeff sees racial danger in the triumphs of modern surgery and medicine: "Woman with narrow hips cannot give birth to her child. Surgery steps in and saves her and her child and thus the narrowing is perpetuated. The higher the infantile death rate, which medicine so energetically combats, the more surely is the next generation purged of all weakly and sickly organisms. Every new success of medicine will accelerate the progress of deterioration." H. M. Stanley says, "It is only by intense struggle that those new psychic forms are initiated and developed which are of the utmost service to the organism."

Stanley further states, "Though function is generated and developed by severest, painfulest struggle, yet reward is pleasurability of the free functional activity; and the more manifold the functioning built up, the more manifold the pleasure." H. R. Marshall says, "The elimination of pain implies loss of all pleasure capacity. Theoretically, then, it appears that the elimination of pain would imply the elimination of pleasure also and the destruction of psychic life; that is the reduction of consciousness to pure indifference, which, accurately speaking, is no consciousness at all." Lotze says, "We can choose only the one or the other,—either the simple, monotonous harmony of an uneventful life according to nature or the full articulated melody of civilization, gradually unfolding through many a discord."

Pain, doubtless, has been a great factor in the evolution of the race, weeding out the weak and making the strong stronger; a powerful deterrent and monitor negatively pointing out the lines of development and by contrast heightening the pleasurable feelings and therefore has been very instrumental in building up the pleasure-capacity. But is pain more fundamental than pleasure? Is not pleasure the more fundamental affection? Is not the evolutionary process an expansive movement? Is not pleasure the characteristic affective element in both the storing up of energy and the expending of it within the normal limits, peculiar to the organism? There is pleasure in work itself. There is a sort of plant-joy in its very growth and development; a child-joy in the child's activity; a pleasure to man in doing something though it requires much effort. Theoretically the evolution-process is an unbroken continuum, not cataclysmal, not a movement of jerks, jostlings and jumps. In the past it may have been frequently catastrophic, but the indications are, that in the future, it will be quite uniform.

Health is not pain, neither is it necessarily obtained through pain. Health means pleasure, that is, the well-being feeling. The bodily tone defines the degree of health. Féré says, "His experiments agree perfectly in showing that pleasurable sensations are accompanied by an increase of energy and disagreeable ones by a diminution."Grant Allen says, "Pleasure is concomitant of healthy action of any or all of the organs or members supplied with efferent cerebro-spinal nerves to an extent not exceeding the ordinary powers of reparation possessed by the system." The feelings of strength, buoyancy, the desire to do are pleasurable, and spring from health. The feelings of impotence, obstruction, negation of the expansive movement are painful and mean ill-health.

Fear. Fear may be normal or morbid, and, like pain, may be useful or detrimental. President G. Stanly Hall says, "Fear or anticipatory pain is probably the great educator in both the animal and the human world, even science being developed in a large measure for prevision or to eliminate the shock which is so disintegrating to the system. Those who fear aright survive." Elsewhere he states, "Not only does every one fear, but all should fear. Without fear, what a wealth of motive would be lost! Fears are necessary because they are the root of so many of the strongest intellectual interests. . . . To feel a given fear no longer over but beneath us gives an exquisite joy of growth." The fear of God is a wholesome fear, likewise that inspired through awe. Byron speaks of the "freshening sea" and the terror of the breakers as being a "pleasing fear." All have felt the uplift of the passing storm, the mountain heights, down-pouring, thundering cataract, broad expanse of open-sky. One had best fear than be fool-hardy, but "to fear aright," "to feel the fear beneath us," might not only be regarded as the "beginning of wisdom," but its end. Dr. Hall also says, "The intensity of many fears, especially in youth, is out of all proportion to the exciting cause." Just here lies the danger of fears, so many of which are morbid. The fear that comes to dominate a life, becomes a possession that is most detrimental. It is the bane of physician and surgeon, the vulnerable point for quackery. Even the temporary fears, as Virgil here and there so well describes them, "paralyzing the limbs," "sending cold tremor into the lowest bone," "the hair on end," "cold perspiration rushing out," "the voice sticking in the throat," violent trembling, palor on the cheek, disturbance of heart action, respiration, undue peristalic movement, contraction of the bladder and the glandular organs, all speak the evil influence of fear.

The following sentences from Mosso's book on Fear are to the point: "Every violent emotion leaves an imperceptible, morbid, accumulating tendency behind." "Fear alone may develop all the symptoms of a pestilential malady even when the epidemic causes are totally wanting." "More especially during epidemics does fear play havoc. From the most remote antiquity physicians have observed that the timid die more easily." This was notably the case in the Black Death scourge and London plague, and has been so in our own time in epidemics of yellow fever, cholera and smallpox. Mosso, in speaking of scurvy on board of ship says, "In every fresh tempest several died and others were seized with the malady; and when at length the captain, in whom all had great faith, died the number of patients became five times greater." Dr. Wm. H. Holcomb, who believed that the spread of yellow fever and its fatality are almost wholly due to fear, tells how all the guests and servants at a hotel were exposed to it. All promised to stay in the hotel, be composed and nurse the patient, except one woman who had great fear and shut herself apart and was the only one who took the fever. The writer when sixteen had grave fears of smallpox in the neighborhood. So malignant a form was it, that eleven out of fourteen stricken with it died. He could scarcely eat or sleep for days from the intense fear of the disease. His mother, who had had it, finally ascertained the cause of his despondency and restlessness, gave him assurance and cast out the fear. Mosso says, "If we were to cite all the examples of hysterical women, nervous, melancholy, paralytic men who, on the simple words of a physician through faith in the efficacy of some remedy have taken courage and recovered, we should see that every day wonders and miracles worthy of the saints are performed." Dr. Holcomb states, "Fear being recognized as a powerful cause of disease and a direct and great obstacle to recovery, a wise sanitation will exert itself to prevent or antidote its influences. To eradicate fear is to avert disease, to shorten its duration, diminish its virulence and promote recovery."

Anger. Anger is a defensive emotion and has been of great service in the evolution of animal life, and like pain and fear is of utility yet, when properly controlled. There is always a strong tendency in anger to get beyond control of the individual and it then results in great evil to the organism. Violent anger generates ptomaines in the blood. All dread the bite of a furious animal because of the toxic poison present at these times. In anger the human bite is poisonous. Mothers in a rage have poisoned, through their milk, the sucking child.

If one expresses his anger, the angrier he becomes. I have noticed that in punishing a child with the rod that each blow tends to call forth another more intense, especially when one has been exasperated. Reason must here inhibit. On the other hand if anger is allowed to rise and is repressed it expends its force upon the glands and disturbs their functions. Ribot says: "I note among others, one accurately observed point: the suffering which one inflicts on one's self such as biting one's hands or gnawing one's nails; the destructive tendency when repressed, expends itself internally, at the cost of the envious man."

I know persons whom a flurry of anger incapacitates for work hours after it. I call to mind a robust man whose anger was always followed with a bilious attack. I am acquainted with another, who ordinarily is not susceptible to taking cold; does so on the slightest exposure after he has been agitated through anger.

Worry. Fear and anger have a utility, but worry is an open enemy to well-being; is disintegrating and soon becomes pathological. The root of the word in the Anglo-Saxon *worowen*, *wirien*, "to strangle" best defines it. To worry is to strangle the life. It is manifest in anxiety, undue solicitation and fretting. It makes despondent and impotent the strongest; undermines the health as nothing else can, and is largely responsible for the filling of the hospitals for the insane. It is the bane of all life, health, progress and happiness. Horace Fletcher in his "Menticulture" regards worry and anger as the two roots of all our woes.

Many of the returns from the questionnaire "Keeping Well" are conclusive as to the evil effects of worry: "Worry, for me, brings dyspepsia and nervous disorders." Another says, "Depression and worry have broken my health." A woman writes, "I should be well did I not worry." Another says, "My poor health is decidedly improved when I forget to worry." A physician, "I know a woman always sick solely through worry." A female teacher of forty writes, "Anxiety speedily produces certain bodily symptoms, if continued; and lowered physical conditions mean less ability to do good intellectual work. So certain am I of this fact in my own experience that I defer decisions requiring my best judgment until I am physically at my best." A physician at the head of a sanitarium for nervous diseases says, "Many people who nervously break down do so not from over-work so much as from worry or mental unrest. A child under the care of a cross, fretful person will become impatient and less likely to resist disease. Many very sick recover when cheerful faces are before them and encouraging words are spoken, while gloomy countenances and discouraging words often prove fatal."

The Higher Emotions. So apparent is the wholesome influence of the higher emotions upon health that it is not necessary to dwell on this point.

Hope that is the natural enemy to fear, worry, anxiety and dread and drives off the imminent; the moral satisfaction that comes from having done well for himself and his fellows; the intellectual and æsthetical joys that spring from accomplishing something; seeing and feeling relations and unity; sympathetically entering into the life and spirit of artist and painting, musician and music, poet and poem; having the feeling of "Worship the Lord in the beauty of holiness" and taking into the life the evolution spirit of "Be ye, therefore, perfect;" doing one's very best and casting off all care,—have a significant influence upon the health and welfare of the individual and the race.

Reminiscence. Childhood lives in the present, young manhood in the future, old age in the past. Happy, natural childhood with its myriad joys, "lays deep foundations for lofty, future decorations;'' is a never-failing fountain of sweet waters that find their way adown the life, making green the barren, creating health and beauty everywhere, bringing age to renew its youth and making death a passing.

An eminent psychologist said to me, ''Reverting to childhood days is a cure for my mind and body. The scenes of my childhood have saved me in sad affliction. When worn with the year's work, if I can only get back to the old farm, I rapidly recuperate and I am soon restored. It is my best medicine; these remembrances are my tonic.'' The writer, too, can bear testimony to the pleasures of memory and the associations of childhood days and ways as the best of cures. His period of life from five to nine, spent in a loved spot, has left an indelible impression on his life for health and happiness. The child who has never known an old homestead, a permanent dwelling place, no anchorage to perennial loveliness where'er he roams, has not received his heritage, and, though counted rich, is poor indeed.

The poet draws much health and life-content from childhood. This is evident everywhere in Wordsworth. With Tennyson ''The Brook'' is but his childhood song of the brook behind the old home; ''flower in the crannied wall'' is but the child-man philosophizing, and just so is it with Lowell in ''The Cathedral.''

IV.

WHAT HEALTH MEANS.

Phœbus-Apollo, born of Zeus and Leto, the god of Light, Prophecy, Music, the Arts and Sciences, was the highest Greek conception. As the god of Light, he gave light and heat to the world, creating life and health, mind and heart in man. He was the healer, god of perennial youth, manly vigor, womanly grace, the leader of the Muses, the embodiment of all that is true, good and beautiful.

Apollo's power of healing was transmitted to his son Asclepius, who under the tuition of Centaur Chiron, became the god of Medicine and therapeutical art. So great was Asclepius's skill that the dead were reanimated. Hades being rapidly depopulated, Aïdes sought help from Zeus, who fearing an invasion of his dominions by earth's mighty race of men, hurled down a thunderbolt and killed the health-giver and life-preserver.

There had been born to Asclepius two daughters, Hygeia and Panacea, who conserved their father's art. From these conceptions came the Greek notions of health, prevention of disease and cure. E'*υφόρειν* to bring forth abundantly, *ευ̉̓φορος* active, vigorous, healthy, well-being, easily bearing, able to do and endure, and *εὐφόρως 'έχειν* to feel better were common expressions in Greek daily life. They were hygieolatrists. The statues of Hygeia personifying health represented the goddess coiled about by a great serpent, the symbol of wisdom, cunning and healing, the gift of Asclepius.

Hygiene to the Greeks meant sound body and mind. The physical notions of health were vigor, activity, youth, euphoria, grace and beauty; the mental, the power to think and feel, to love and be loved, to enjoy and appreciate life, know truth and be truly happy.

The health notions of the Romans were expressed in *salus* and *sanus*. *Salus* (*saluber*) meant safe, sound, whole, well, uninjured, preserved, delivered from sin and its penalties. The verb *salvēre*, to be well; *salve*, *salveto*, *salvete*, heaven keep you, how are you? I hope you are well, were common expressions. The two notions, safe and well in *salus* were personified and the temple of Salus stood on one of the summits of the Quirinalis.

Sanus more particularly pertained to the states of mind and body, not so much to the idea of health—greeting and well-wishing. *Sanus* meant sound body and mind, safe, hale, whole, rational, discreet. *Sanus* and *salus* both expressed health notions but with this differentiation, that *sanum corpus* signified the temporary condition of the body, allied to *integrum*, unwounded, unimpaired, vigorous, powerful, fresh, inexhaustible; while *salus* expressed the idea of constitutional soundness allied to *robustum*, hard, firm, solid, strong, lusty, robust. *Validus* and *bellus* were also used in speaking of health. *Validus* meant health as giving power of action in a physical sense. *Bellus*, used for our word "well," expressed at the same time the agreeable sensation that comes from health, the feeling of well-being, the Greek "euphoria," our coenæsthesic pleasure.

The Roman concept of health, springing from their character, manners and customs, love of power, conquest and law, Juvenal expressed in his "*Mens sana in corpore sano*," as the best gift of the gods. The Romans, unlike the Greeks, subordinated the feeling of well-being to utility and action, yet the notions of health held by both were essentially the same,—that health is the *summum bonum*, the source of all good; without it, the ills of life.

The word "health" comes from the Anglo-Saxon root "hale." From the same source come "whole," "holy," "hale" and "hail." "Whole" means entire, free from defect, complete, unimpaired, integral, sound, well. "Holy" bears the notions, whole, well, health, salvation, happiness, consecrated, hallowed, guiltless, dedicated, acceptable to Deity. "Hale" means whole. "Hail" expresses a friendly salutation, solicitation, health-wish and happiness for another.

It is not necessary to draw hard upon the root-meaning of health to find that the Anglo-Saxon peoples, with the Greeks and Romans, regard it as the one desideratum, from whence come life, efficiency, morality and happiness; that health is wholeness, completeness, freedom, the holy of holies, the most sacred and essential part of being and in no wise is to be corrupted, polluted, defiled.

Could the child at birth duly appreciate the influence of health and feel it in contrast with ill-health and impotency and were given the choice of wealth, honor, power, rank, or health; were the child rational, not a moment would decision waver. "Give me health, sound body and mind." All else will come, must come, and more besides, the sum of all, that indefinable, inexplicable something called happiness, which man in his much diligent seeking rarely finds, and which too often proves fleeting and ephemeral, the feeling of a day, an hour, a moment."

The various dictionaries and medical lexicons define health as the bodily condition in which all the organs perform their functions freely, regularly and without pain, thereby making the life normal as to its duration, efficient and happy. J. H. Sterling, in "Secret of Hegel," says, "Health is as the outward sign of freedom, the realization of the universal will, that health may be set at once as sign and as goal of the harmonious operation of the whole system, as sign and as goal of a realization of life."

But health eludes definition. It may be inadequately described. It is a feeling and the affective life can never be wholly expressed, much less communicated. I may say that health is to feel well, buoyant, strong, active, ready for work, the must-do-something feeling, joyous animal spirits, expansive coenæsthesia, the desire to live always. He who has had health and lost it, or who in the midst of health has fits of indisposition, or who has long lacked health but has obtained it, or he who is chronically ill, and has his occasional hour of euphoria knows the meaning of health. He who is well and has always been so, or he who is ill and has never been otherwise, only can know health or ill-health through inference which is cold and remote from experience of sense and feeling.

However inadequate definition in the province of the affective life may be, it serves to emphasize, limit and point out. Were I to define health emotionally as expressing my own personal feelings in the temporary moments of euphoria, I should speak somewhat after the manner of Browning in "Saul," "Our manhood's prime vigor, the wild joys of living!" Should I seek to define combining introspection and science, I should define health as such a behavior or such a result of behavior of the human organism as a co-ordinate and harmonious whole that the life is necessarily efficient and has the feeling of well-being. Ill-health, then, would be the thwarting of the body's spontaneous and harmonious activity, the negation of its efficiency, the disturbance of its well-being tone. This is definition of the personal, physical health; but mental and physical health are so closely allied that they are correlative if not practically one. The mind does influence the bodily states, yet it is not to be doubted that mental efficiency and well-being arise largely in the normal, rhythmic behavior of the organism.

Biologically considered, health might be defined as the free and harmonious functioning of an organism throughout its life-course, making it, in its peculiar evolutionary periods, efficient in the biological continuum. Philosophically, health might be regarded as the logical condition of life in the attempt to realize its freedom and overcome its limitations in the evolutionary process and thereby live its own, peculiar efficiency into the enrichment of the universal will in its endeavors for a more complete self-realization.

Mosso says, "What we call instinct is the voice of the past generations reverberating like a distant echo in the cells of the nervous system. We feel the breath, the advice, the experience of all men, from those who lived on acorns and struggled with the wild beasts, dying naked in the forests, down to the virtue and toil of our father, to the fear and love of our mother."

Man is the result of the blending of many life interests. He has come up from the past. His course has been a long one, but it is now only begun. He is a part of all nature and must evolve with her. He must adjust himself to the upward movement and come into close *rapport* with the universal, endeavor process. Nothing short of this is abiding health.

The remote end of personal hygiene is racial welfare. The Egyptian priest emaciating the body by meagre vegetable diet for the spirit's sake; the Stoic divesting himself of all he possessed and retiring within his own subjectivity, rejoicing in nothing but his independence of all externals; the religious devotees crucifying the flesh and making life miserable through long fasts, weary vigils, lack of air, sunshine and exercise; those with false, moral convictions who abstain from simple, harmless joys, the passing pleasantries that make so much for health; the scholar wholly dedicated to learning, retiring to his cave, unmindful that the intellectual life is but one of the aspects of being; the athlete ruled by the notion, athletics for athletics' sake, not aware that man needs a many-sided training; the man in business whose life is dominated by the love of material gain, ignorant of the aim and end of living,—all stand a barrier to the welfare and happiness of the race.

Veresaeff in "The Confessions of a Physician" says, "Decay lies hidden in man from the tenderest age. His body begins to decompose before it has even had time to complete its development. Nearly every one has some ailment. Normal man is a sick man. A woman may be defined as an animal naturally weak and sickly only enjoying occasional bright periods of health which show up against a background of uninterrupted disease. The healthy person represents a happy freak. The world is a gigantic infirmary." Doubtless Veresaeff is somewhat morbid, disappointed with the progress and results of the science and art of medicine and seeing the abject condition of life and living in Russia. There is a vast amount of ill-health in the world, brought to us from the past and augmented by our own unhygienic, immoral living. There are, however, encouraging signs. Even with the great increase of population in the cities of the United States from the rural parts and the incessant flux of the lower and ignorant classes from foreign countries, there has been a very perceptible increase in the average length of life in the last fifty years. In England three centuries have added fifteen years to the average of life. This is due to scientific sanitation, especially as it is now applied in the cities, some of which are now healthier than the country, where often little attention is paid to sanitation. Two or three years of effort have rid Havana of yellow fever.

The interest in health is universal as is seen by the health-greetings once not merely formal expressions. The Greeks said "'*υγίαινε*," "Be well," "be healthy," "*χαῖρε*" "Hail," "farewell!;" the Romans "*Quomodo vales?*" "How is your strength," "*salve*" "*salveto*," "*salvete*," "Heaven keep you," "How are you?" "I hope you are well;" The English say "How are you? I hope you are well;" the Germans, "*Wie befinden Sie sich?* "How do you find yourself?" or "*Wie geht es?*" "How goes it?" The French, "*Comment vous portez-vous?*" "How do you carry yourself," or "*Portez vous bien?*" "Carry you well?" The Italians, "*Come-sta ella?*" "How do you stand?"; the Spanish, "May you live a thousand years!"; Russians, "How do you live on?"; Polish, "How do you have yourself?"; Swedish, "How can you?"; Hollander, "How do you are?"; Japanese, "*Kon-nichi-wa?*" "To-day, How?" or "*Ikaga-desuka?*" "How do you feel to-day?"; Chinese, How is your stomach?" or, "Have you eaten your rice?"; Persians, "May your shadow never grow less;" referring to the hot noon-day sun when there is but little shadow; Arabians, "May God strengthen your morning!" or "May your morning be good," or "How are you?"; Egyptians, "How do you perspire?" a dry skin meaning a dreaded fever; Zuñi Indians, "How have you passed the night?" or "How have you come unto the sunset?;" the Orinoco Indians, "How have the mosquitoes used you?" so troublesome are these pests.

There are the formal greetings as "good morning," "good-by" indirectly referring to health and the "weather expressions" which more directly touch the mental condition and bodily tone, "What a fine day!" "This is miserable weather!" We are ever ringing the changes on our weather vocabulary. We are up and down with thermometer and barometer. Carpenter, in his "Mental Physiology," says, "There are many persons who pass their whole lives in an alternation between cheerfulness and depression; the former state being favored by freedom from anxiety, by the healthful activity of all the organic functions, by a bright sun and a dry, bracing atmosphere; whilst the latter is immediately induced by mental disquietude, by a slight disorder of digestion or excretion or by a dull, oppressive day."

The will to live is the oldest and most deep-seated part of our being. It manifests itself everywhere, from lowest plant to highest animal form; in the ooze of the sea-depths, on inhospitable mountain heights; in frozen zones and boiling geysers; in earth, air and water. The shrub hanging from barren cliffs gnarls root and branch for the struggle. The beech when girdled is three years in dying and in the final throes puts forth a hundred young. The hyacinth mother-bulb, wounded, perpetuates her life in a dozen bulblets. The fern leaf throws off its millions of spores. A yeast germ, had it opportunity, would multiply to the size of the earth in a fortnight. Some bacterial forms, would in the same time, fill the oceans were their waters the proper nutrient broth. A star-fish can lay thirty-nine millions of eggs in a day; an oyster eighty billions in its life course; a common toad ten thousand; a queen honey-bee five thousand eggs in a day. The human female ovaries contain from thirty to seventy thousand ovule germs, several hundred of which develop and are discharged. According to Lode, the human male discharges weekly two hundred and twenty-six million two hundred and fifty-seven thousands spermatozoa. This is Nature's way of immortalizing herself. Suicide, then, is thwarting Nature and he who does it must be regarded temporarily or permanently insane. The truly sane never suicide. In our civilization, even one's honor at stake, no matter how fallen, rationality insists upon preserving the life.

Insanity is disease, ill-health. Suicide falls into the same category. The suicide of the stoic Zeno, Cleanthus, and many great stoics shows to what straits an intensely subjective life may bring the best of mankind. Man's welfare cannot lie in sheer independence and in total indifference. Virtue for virtue's sake, our highest ideal, is too subjective for our present stage of evolution. Of selfishness the most selfish, of immorality the most immoral, it is to retire cowardly from the arena of life and wash the hands of the world and its struggles.

Pessimism is mental, moral or physical ill-health or all. Pessimism inevitably leads to some form of ill-health and ill-health is an open way to pessimism. For the pessimist there is no life-expansive process. The life movement is ever contracting. He lacks the spirit of elasticity and accommodation, experiences no spontaneous outbursts of joy, exhilarations, exuberance of the life current issuing from the surplus strength, over-flowing vivacity, euphoric buoyancy; is never conscious of a background feeling of naïve, animal life. He consumes himself in snaps, snarls and bites. Pope, hunch-backed, miserable, petulant, acrimonious and supercilious; Byron, brilliant, immoral, haughty and contemptuous; Schopenhauer, irregular, disappointed, irascible, unwilling to call anything good but absolute death; Poe, truly poetic, but self-consuming, drunken, morbid and delirious; Carlyle, with his poor, weak stomach ever thrusting itself into consciousness could little appreciate the joys of life. For the pessimist there are no sunny days, green fields, meadows, clear skies, cool brooks, shady forests and song of birds; no racial echoes of a distant paradise. The Golden Age is leaden, Saturn hoes in toil among the thorns, the Arcadian days cheerful with song and dance are but brute barbarism. The past is dark, the present miserable, the future gloomy. He cares not for a to-morrow. He has no intimations of a Valhalla, a New Jerusalem, a Tree of Life. Why should he want its leaves and fruit of immortal healing?

In sharp contrast to the spirit of pessimism is the life-joy that knows no bounds, welling out of the animal surplus, the source of all real health. Hawthorne in "Marble Faun" has admirably portrayed the "surplus-life" in the simple, rugged, sportive, animal-spirited Donatello, born and bred on the sunny vineyard slopes of sylvan Tuscany. Such physical well-being, rhythmic bodily tone, euphoric health form the true ground for sanity, efficiency and happiness.

V.

HYGIENIC AND PEDAGOGIAL CONCLUSIONS.

It has already been stated that the questionnaire "Keeping Well" has been answered by intelligent and professional persons; that the questions on the sale and use of drugs were presented personally to druggists and physicians. These inquiries have sought personal experiences and not theories. Where theories have been given they have been thrown aside. The answers, generally, show interest in personal hygiene, intelligent self-examination, and care in presenting the facts. Had the questions on "Keeping Well" been answered by the ignorant and by those engaged in manual labor the facts might be somewhat different. The material at hand varies greatly in value. Some of it is trivial. Some is illustrative of commonplace truths, while much is merely suggestive. But from this written material, many personal interviews, reinforced by general observation, reading and self-examination the following conclusions are justified:

First. Health is an individual matter, a truly personal condition. So personal a matter is it, that viewed from the standpoint of hygiene the philosophical dictum of Protagoras, *πάντων χρημάτων μέτρον ἄνθρωπος* seems at once a truism while the *ἕν καὶ πᾶν* of Zenophanes apparently has no ground. The individual appears his own health standard. Though all are under the general hygienic laws, food, clothing, sleep, mental and physical exercise, recreation and rest being necessary, yet the individual is thrown upon the Socratic *γνῶθι σεαυτόυ* to judge for himself the amount, manner and periodicity of these necessities. It can be said, broadly speaking, that too much food is eaten, too little exercise and sleep are taken and the labor undertaken is too burdensome and taxing. It seems to the writer that the individual variations in personal hygiene deserve the most careful attention and study.

Second. There is lack of knowledge of the fundamental laws of physiology and hygiene with many, and little study is made of one's own personal limitations. Some are forced through ill-health to study themselves, but too often this study serves to emphasize the morbid mental or physical conditions. What is needed is self-study in health, that the health-capital, if not augmented, may, at least, be sustained and the individual be kept at "the top" of all he is capable in the various stadia of his life.

Third. Though the writer does not see the hygienic condition of the world of to-day as discouragingly as Veresaeff, the vast amount of ill-health reflects discredit on science and our social organizations, the home, school, church and physician.

To whom or what shall the blame chiefly be laid? Is it man's ignorance, carelessness, lack of interest in posterity? The question involves inquiry as to the efficiency of medical science, the instruction in the schools, parental intelligence and training, sermons from the ministry, sanitary laws and their enforcement. The rank and file are not yet thrifty animals, a stage so necessary for higher evolution, efficiency and happiness. There is, from the age of thirty to forty-five a striking lack of mental and physical reserve force, the insuppressible buoyancy of Donatello. Comparatively few have great amount of health reserve.

Fourth. As yet the people are not far removed from superstition, talismanic charms and the medicine man. The words "doctor" and "medicine" have great influence. Much faith is grounded here which many physicians fail to appreciate, leaving this weak point of attack open to quacks, advertisers and patent medicines. Too many physicians are ignorant of mental science and its use in therapeutical art. One is surprised to find how many people have a sort of medicine habit; whether ill or simply think themselves so, resorting to taking much medicine of some kind, and often of any kind as cure-alls. It is astonishing how credulous people are, using as they do great quantities of "patent medicines" as they appear by the scores on the American market each year. The quack, advertising doctor and incompetent physician come in for a great share of money-waste dealing out ill-health and death. Statistics can never show the loss of life, multifarious health evils, and money-waste at this game between artful gamesters and the uninitiated. It is encouraging to note that the most competent physicians no longer prescribe much medicine. They are emphasizing nursing and care, the study of personal conditions and limitations.

Fifth. Man's emotional life is one of the deepest aspects of his nature and has a far reaching influence for health or ill-health. Morbid fear, dread of disease, great anxiety, anger, worry, unpleasant surroundings, discontent, directly militate against health, making the life susceptible to disease. While the feeling of security, well-being, contentment, self-control, joy, the ability to revert to happy hours, childhood days, duty done, attainment, the consciousness of growth and development are highly conducive to health.

Sixth. Man's moral and religious life is barometric of his physical and mental hygienic condition. Whatever improves the health and adds to its permanency makes man better, greater, truly more religious and places him in line of natural development. Crime, pessimism and suicide have root in ignorance and draw nourishment from some form of mental or physical ill-health. Health-ideals are needed; what man hygienically can be and ought to be. The text, that a greater degree of health in the individual and the race means more morality, better religion, greater happiness, higher efficiency, more rapid progress, fuller and richer self-realization, ought never with parent, teacher, pastor and physician to seem hackneyed and commonplace. Such a text contains an almost limitless number of teachings, interesting, wholesome, practical and influentially far-reaching on the welfare of the individual and the race.

I here desire to thank President G. Stanley Hall for having suggested the study to me and for his stimulating words from time to time. I am indebted to Professor William H. Burnham for help and encouragement in the work; also to the druggists and physicians who have given me much valuable information, the educators who have been interested in the study and all who have answered the questionnaires.

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REMARKS ON THE PSYCHOLOGY OF CLOTHES.

By Louis W. Flaccus, Ph. D., Sometime Fellow in Clark University.

I.

All this paper aims to do is to open up a problem for investigation and discussion, to set forth a few generalizations looking towards its solution, and to indicate briefly by what methods of observation and collection of facts such generalizations may be substantiated.

No one, I think, will deny the general statement that clothes have a marked effect upon our mental life. But it is one thing to make a broad statement of this sort, and quite another thing to ground it scientifically, and to define with some approach to accuracy and thoroughness the nature of this effect and some of its causes.

The problem at hand shares with many others which have been recently taken up certain difficulties in the way of a scientifically accredited discussion. The following is the crux of the matter. Certain mental states are so complex and of so subtle an origin that they cannot be dealt with analytically with any measure of success by the current methods of psychology. The less a chance for physiological and experimental work, the greater the difficulty. Thus, while we have some excellent papers on the feeling-tone of sounds and colors and the æsthetic value of certain simple forms, we have much wild theorizing on such complex matters as the nature of evanescent æsthetic emotions or the total affective state of consciousness during the appreciation of a tragedy. The psychology of the crowd, of the weather, the study of ideals, etc.,—these are all interesting problems. The psychical effect may be traced; the demand for an explanation is justifiable; we must, however, admit that this demand overtaxes the present resources of psychology. To hope that psychology will ever be able to give a scientific formulation of all that stirs in the depths of consciousness is to be unduly optimistic. There are, I believe, certain experiences so extremely subjective that they do not admit even of the preliminary process of fixation.

Luckily for us the problem of the effect of clothes on the psychical life is not hopelessly insoluble, although in some of its aspects it is on the ragged edge of scientific analysis. There are what the Germans would call Anhaltspunkte. Certain effects are indirectly traceable to physiological factors,—skin sensations of pressure, contact, temperature, etc.,—others show the simplest routine working of association of ideas. The interest there lies solely in bringing out the facts of connection. Much of the material then comes under the usual rubrics of psychology. When physiological clues are not to be had and psychological terminology proves insufficient, nothing can be attempted beyond a few tentative suggestions.

II.

The problem was taken up at the suggestion of G. Stanley Hall. It was he who drew up and sent out the following questionnaire:

TOPICAL SYLLABUS, No. 3.

(Academic Year 1904–1905.)

THE PSYCHOLOGY OF CLOTHES.

State sex and age.

1. How does a sense of being well dressed or the opposite affect you? How are you affected by shabby or ill-fitting gloves or shoes?
2. Do you feel a change in your personality, and if so describe it, from being (a) in conventional evening dress, (b) in an outing costume which gives unwonted freedom of action?
3. Do the materials of your dress affect your feeling, *i. e.* whether they are filmy soft stuffs or stiffer and more unyielding material? Do you like the rustle of silk? Does the wearing of fur have any special effect upon your mental state? Does the character of your hat? Do you like to wear a train? Why?
4. How does the presence of some defect in your clothing, which may not be obvious to others, affect you? Are you conscious of a difference in feeling due to fresh, dainty underwear, irrespective of external dress?
5. Are you particular about the fit of your clothes or to have them of the latest style? Have you special preferences for certain articles of clothes, *e.g.*, hats, lace, jewelry, fine gloves or shoes, handkerchiefs, pins, neckties, etc., so that any extravagance in dress is likely to be in that direction?
6. What is your feeling towards imitation lace, jewelry, etc.?
7. What proportion of one's total personal expenditure do you think should be devoted to clothes?
8. Children usually like to "dress up." Did you do this when a child and in what lay the enjoyment of it? As a child were you particularly conscious of your clothes, and to what influences would you attribute this?
9. How are you impressed by the dress of others? Does it affect your estimate of a person and if so in what ways?
10. What individual tastes and preferences do you sometimes indulge that are at variance with fashion?
11. What can you suggest about the care of clothes and its educative value?
12. What do you deem important in the care of nails, dressing the hair, cosmetics, face washing, etc.? Can cleanliness be excessive, and what about exposures of certain parts of the body, both in society and to sun and air in summer—going barefoot, gloved, bareheaded, etc?

13. What reforms in the dress of men, women and children would you suggest, and what about too much or too little clothing?

14. What about ornaments and adornments generally?

15. Say something about canes, parasols and fans, and also state any experience with masks, masquerades, theatrical costumes; the *lies* of clothing, *e. g.*, padding of all kinds, fits, pinchings, tight fits, and loose flowing raiments, and what changes are natural at different ages and periods of life.

Kindly send returns to

G. STANLEY HALL.

CLARK UNIVERSITY,
Worcester, Mass., February 15, 1905.

This questionnaire was sent to a Normal School in the State of New York. One hundred eighty-one sets of answers from girls were received.

Judging from the answers, the questionnaire admits of improvement on several points. Questions 7 and 12, especially the first part of 12, bring out some interesting facts as to expenditure and as to hygienic practice and personal care of the body, but scarcely anything of psychological interest. This is all the more disappointing because the questions are as a rule answered most fully. 8 contains the ambiguous phrase "dress up." 6, 9, and 14, to judge by results, hardly bring out the complex mental processes they are aimed at.

A few words as to the general nature of the answers. They seem to have been given conscientiously, in good faith. They are brief, schematic; there is an air of sameness about them which indicates inexperience in analysis and introspection.

Because of the very limited number of answers, little would be gained by working up the material in percentage form. Again, there is little need of taking up the questions in order, for that would mean, in an unsystematic questionnaire of this kind, missing connections and convenient groupings. Constructive comparison must have some place; always, however, on the basis of some suggestive fact.

I shall arrange the material in three groups, as follows:

1. *Minor and incidental matters; psychological titbits, etc.* Questions 7 and 11 belong here.

2. *Changes of self-feeling; fluctuations and changes in personality; differences in feeling-tone; diffusive and expansive effects.* Here belong questions 3, 12, in part at least, the last part of 5, and all of 15 except what relates to the lies of clothing. Questions 1 and 8 are transitional.

3. *Effects on the self as a social reflex phenomenon.* This means a discussion of such factors as social self-seeking, fluctuations in social estimates, group-consciousness and group-opinion, fashion, etc. Questions 1, 4, 9, 6, 10, and the first part of 5 are of this group.

GROUP I.

Question 7 brought various estimates as to what amount of one's total expenditure should be devoted to clothes. All that can be said of the answers is that they are interesting. 131 of the 181 give a definite fraction, varying from ½ to $\frac{1}{10}$, sometimes on the basis of total income, sometimes on that of total expenditure. About $\frac{1}{5}$ represents the average. Very striking is the wide range between maximum and minimum. It represents something more than a difference of opinion in matters of domestic economy; it suggests a wide variance in the degree to which the thought of clothes may fill consciousness. To a person who considers ½ of his total expenditure the proper amount to be given to clothes, the primitive functions of protective covering and pleasing ornamentation with its simple delight in color, form, and outline have yielded in importance to the creating of secondary social demands,—of leadership and distinction, love of praise, emulation; in short, all the feeling-elements a desire to be fashionably dressed implies. To these must be added a volatile temperament which delights in self-mutations. The typical case of the young man who would wear a suit of clothes once or twice and then would order a new one is not to be explained merely in terms of an impulse to spend money for the sake of spending it. Of course there is such an impulse; it is as simple as its counterpart, the collecting instinct. Its chief characteristic is a defective inhibitory mechanism for the checking of chance suggestions. Extravagance in jewels may sometimes be explained on such grounds; extravagance in clothing, rarely. The latter generally must be laid at the door of secondary feelings of the kind instanced. A man gets tired of wearing the same suit or the same tie. What he really wants is a change in his "material me" with whatever subtle emotional displacements that brings. The far-reaching character of such changes will be dwelt on later. Suffice it to say for the present that the mere change from a dark suit to a light one will often induce a direct change of mood. If we add to these factors of self-change and self-accentuation the demand for social recognition and the desire of impressing others, we can understand the peculiar element in extravagance in clothing. The smaller the number of large, permanently established interests, —of family, property, vocation, etc.,—the more likely is consciousness to occupy itself with the husks of being (to use a phrase with Carlyle's spirit in it). Remove the check of other interests, and the consciousness of clothes will make undue demands on time and money. Such a lack of permanent, vital interests has still further consequences: an almost pathological craving for newness and superficial self-changes. This is borne witness to by the familiar phrase, "I have worn this twice; I am tired of it."

The value of the answers to question 7 is lessened because of the frequent acknowledgment on the part of the girls that they have had little experience in such matters. Of the 43 who do not set down a fraction, 25 frankly admit that they do not know, while the others give modified answers: "all depends on one's station in life;" "whether one is in society;" "it can't be estimated on the grounds of income," etc.

Question 11 inquires into the educative value of the care of clothes. 53% do not discuss the matter in any way. The others are about equally divided in the following three groups:

1. Such as dwell on the æsthetic qualities it tends to develop; taste, judgment in selecting suitable color combinations, harmony, discrimination, etc.

F., 19. The care of clothes teaches us the value of harmony with one's surroundings.

F., 18. The care of the clothes trains the mind to notice beauty in color combinations, and cultivates taste for beauty in all things.

2. Such as recognize in the care of clothes a factor of social morality, developing as it does habits of cleanliness, neatness, economy, accuracy. Good taste is, as one girl writes, a valuable thing to have, but these qualities are still more important.

F., 17. Everybody owes it to society to be well dressed.

F., 19. The care of clothes makes us methodical and careful also about other things.

F., 18. It teaches neatness and better manners.

F., 18. It teaches us to be neat and painstaking.

3. Such as recognize a moral factor of a deeper kind: influence on preferences, worth estimates; heightening of self-respect, of the sense of responsibility.

F., 22. When a person dresses nicely an amount of self-respect is given which cannot be had in any other way.

F., 19. Clothes have an educational value; they give a person a certain responsibility and independence. They have a great deal to do with the characteristics and bearings of a person.

F., 19. Clothes make people more self-respecting.

F., 19. The care of clothes adds to one's permanent right interests, and hence makes one more truly educated.

Apart from their failure to recognize the law of specific energy of capabilities, which does not allow the ready transference of efficient handling of one set of materials to other sets, these answers represent sound judgments on the educative value of clothes. I think psychological experiments would tally with the observations of daily life in assigning to women, other things being equal, a finer discrimination in tints, shades, a much keener sensitiveness to harmonious color schemes than is the case with man. At this point fashion interferes least with æsthetic demands; and the cumulative effect of interest and training in such matters cannot but lead to a refining of æsthetic sensibilities of that order. When we find with women a striking case of poor taste in colors, it is not so often due to lack of training of the eye, as in the case of man. It is rather a lapse to the sexual attraction machinery of lower races. This is true of the liking on the part of negro women for flaring combinations of bright red and yellow. It would be very interesting to correlate the growth of a sense of the offensively noticeable and its æsthetic approval of attenuated color-schemes with such socially grounded feelings as bashfulness, self-effacement, diffidence.

Experience testifies to the moral training value of clothes. It shares the strong regenerative influences of property. It is a mistake to treat of property objectively, since it may be viewed as a grouping of psychical states with a certain feeling-tone. The psychical equivalents of a heightening of moral tone through the care of clothes must be found, and since they can be found only in close connection with self-feelings, we must postpone a full discussion of this topic.

GROUP II. CHANGES IN SELF-FEELINGS, FLUCTUATIONS IN PERSONALITY, ETC.

Question 3 touches on definite mental changes due to materials and texture of dress, and on the feeling-tone of certain sound and skin sensations.

1. *Weight of clothing:* Heavy goods are disliked. They have a depressing effect. Sensations of pressure and muscle-fatigue are responsible for this. Heavy shoes or skirts put an additional strain on muscles and joints, especially in walking. Or if the pressure is felt at the shoulders, there is a tendency to stoop, and this interferes with the action of the lungs and the free circulation of the blood.

Heavy hats favor a depressed mood.

F., 18. In a large, heavy hat my spirits are low.

Pressure on the head has a more diffusive effect of discomfort than pressure on hand or foot.

Other relations of the hat to emotional states may as well be taken up here. The answers plainly bring out the fact that the mood changes with the hat.

F., 18. A broad hat makes me feel jolly.
F., 18. If I have a fancy hat on I am in a coquettish mood.

Large hats, as a rule, are preferred to smaller ones. In many cases social self-seeking is directly responsible. In others, however, the relation to physical stimuli is directly traceable.

F., 18. If my hat is flat on my forehead I feel depressed.
F., 18. I feel brighter in a hat rolling away from the face.

In such cases we must reckon with excessive stimulation of the eye because of want of protection, and, on the other hand, with the annoyance caused by a hat set so far forward as to irritate the eye by obstructing the field of vision and interfering with the normal functioning of the eye, focussed as it is for distant objects.

2. *Softness and stiffness of cloth:* The pleasurable feeling-tone of soft goods as compared with stiff, unyielding materials is very noticeable.

The following phrases are used with reference to stiff goods: uncomfortable, awkward, formal, self-conscious, walled in, as if in a case, bold.

Soft goods are generally liked. The girls feel: dainty, more talkative, happier, demure, light, graceful, girlish, gentle, refined.

The psychological factors that enter are very complex.

a. *Skin sensations of pressure, tension, contact, etc.:* Stiff goods, especially when they are next the skin, do not allow of an equal distribution of pressure over the skin area. This intensifies and in a sense multiplies our consciousness of contact. This is especially true of the mobile parts of the body and at the joints where there is a continually shifting tension of the skin. A glove of stiff material is, for instance, at once more noticeable and more annoying than stiff leather leggings would be.

In addition there is the greater liability to interference with natural movements. Stiff goods do not break into easy, natural folds. James speaks of the habits of cloth; and there is something characteristic and undeniably pleasing about a pair of gloves after they have been worn for some time. It is lack of such adaptability which gives to very stiff and new goods an unpleasant feeling-tone. Any bit of clothing that does not adapt itself to the varying postures and movements of the body interferes with such movements. The feeling of restraint or constraint ("walled in," "as if in a case") is but a primitive phase of the being checked or blocked which plays such an important part in the economy of the more complex mental processes of desire, attention, etc., except that it lacks all the compensating features of the latter, such as tension, anticipatory pleasure, etc. That a few of the answers express dislike of very soft, clinging materials is further proof of the unpleasantness of checked natural movements, for clinging goods often interfere with these quite as effectively as do stiff goods.

b. *Self feelings; facts of diffusion and extension, illusions:* Characteristic is the diffusive nature of the feelings experienced. Stiff goods seem to make us feel stiff all over.

F., 20. I feel starched in a stiff waist.

The same is true of the agreeableness of soft goods. Such adjectives as graceful, demure, girlish show very clearly the diffusive character of the experiences, and exhibit them as affections of a self; that is, the stiffness or softness of the cloth affects the total conception of the self as a presented system of representative elements,—meaning by representative elements feelings with the mark of intimacy and authority. It cannot be doubted that there is such an effect,—a pleasurable or disagreeable tilting of consciousness, due to the materials of clothing.

This brings us to certain illusions of extension of self, or, as Lotze has it, "a sympathetic expansion of our sentience beyond the limits of our body." The rather fantastic turn Lotze gives to such illusions should not keep us from acknowledging that they are experimentally verifiable facts. If we touch objects with a cane the sensations of touch seem to be located at the end of the cane. Or if we hold a book or some other object in a gloved hand and finger it the sensations, which as a matter of fact result from the inner surface of the glove pressing on or moving across the skin, are projected; they seem to be located at the outer surface of the glove and to result from the friction between it and the book. To quote Lotze (Microcosmus, p. 588):

> We transfer our actual feeling of resistance, and now we fancy that we feel the contact of the rod with the object at a distance from us as directly through sense as we do its contact with the surface of our hand. On this double feeling of contact—a beneficent sensory illusion—depends all use of implements; none of them would be pliable enough for us if we were aware merely of its presence in the guiding hand, and not, with a like palpable distinctness, of its action on the material to be operated on. Only on this condition is the stick with which he gropes of use to the blind man or the probe to the physician.

Such illusions may be observed with reference to clothing, as when our shoes touch the ground or when the shoulder of our coat touches another man's, no matter how lightly.

Now all such projection-illusions are expansions of self. Let us again quote Lotze (p. 592 *op. cit.*).

> Wherever, in fact, we bring a foreign body into relationship with the surface of our body—for it is not in the hand alone that these peculiarities are developed—the consciousness of our personal existence is prolonged into the extremities and surfaces of this foreign body, and the consequence is feelings, now of an expansion of our proper self, now of the acquisition of a kind and amount of motion foreign to our natural organs, now of an unusual degree of vigor, power of resistance or steadiness in our bearing.

Lotze makes some fanciful applications of this principle. The fondness for high headgear, lofty coiffures, bearskin caps, sugar-loaf hats is explained in terms of a pleasurable lengthening of the rod of self.

Whether or not we are willing to go to the same lengths we must at least admit that the incorporation of originally unrelated objects into the "Me" as a system of presented elements is one of the commonplaces of psychology. Our clothing,—the continual source of impressions of outline, color, etc., and the form under which we habitually see ourselves and our fellows,—is ordinarily felt as an integral part of ourselves. As one of the answers puts it: "Clothing should be well cared for; it is part of us." To what extent this integration has taken place is clearly brought out in the answers to that part of question 12 which deals with the exposure of parts of the body. For instance, going without gloves is said to give a feeling of being not fully dressed.

F., 19. I never feel dressed without gloves.

F., 18. To go about without a hat or gloveless gives me a sense of carelessness.

The wearing of gloves, part of feminine etiquette, has become such a matter of habit that the glove seems part of the hand it encases. The following is in point also. We all know with what intense dislike Sunday clothes with their inevitable shoes and stockings are worn by a boy who is allowed to go barefoot during the week. The shoes are felt to be an irksome addition, something that ought to be kicked off.

Let us go back to our example of double contact. It is evident that the less the attention is distracted by irritating features in the surface of actual contact, the more perfect will be the illusion as to the projected point of contact. If the surface of the head of the cane should be rough or in any way inconvenient to handle, the judgment as to what we were touching with the end of the cane would be defective. This has an important bearing on the matter of incorporation in the self of foreign objects,—unyielding materials of cloth among them. The line of cleavage,—to make use of a roughly pictorial expression,—in such cases of an irritable lack of adaptation will be between the bodily organ and the object, with a minimum chance of possible integration. On the other hand a tool of suitable form, material, structure or one much used is easily felt to be part of our self. Two essential points must not be overlooked.

(1) *The part played by the conative, volitional element in consciousness.* The irritating sensations spoken of check purposeful activity (in the example of the cane, exploring the object.) If the head of the cane is disagreeably rough there is an impulse to drop it and with it the purpose of exploring the object. Such a volitional check is very disagreeable. It brings about a strongly tensional state of consciousness with the feeling that the tool is something foreign. The reason is to be found in the interference of pain sensations caused by the rough surface or

jagged edges of the cane with the muscular adjustments gone through as steps towards the exploration of the object. On the other hand, a tool perfectly under our control causes the line of cleavage to be between tool and object. Thus the expert swordsman whose foil has become almost a living thing experiences an expanse of self-feelings.

(2) *The distinctively pleasurable tang of certain self-feelings, such as the sense of power, of initiative, of individuality, and of making a thing one's own.* Control involves highly pleasurable experiences of expansion and accentuation. Such elements are, of course, most distinctly present at the point of transition, of integration. There must be just enough zest to the thorough appropriation of an object and the resistance it offers. It takes some time for us to get accustomed to a new suit; new clothes make self-conscious. There is much pleasure in their gradually becoming part of ourselves. Now extremely stiff goods, because of not conforming to the natural flexions of our muscles, etc., offer too much resistance to this process. In the phrase "as if in a box" this foreignness of the clothing to the self is very plainly connoted.

3. *Texture and Quality.* The disagreeable feeling-tone of rough materials is very marked. Rough woolen goods are disliked. They give the feeling of creepiness.

F., 18. I am cross when I touch rough materials.
F., 21. I can't bear to touch woolen goods; they make me shiver.
F., 21. I dislike the feeling of flannel next to my skin.

Rough materials rub against the fine hairs of the skin and irritate the sensory organs at their base. An irritable mood very often results. The ruffling of feathers is in birds an index to an excitable or irritable state. A dog or a cat resents being stroked the wrong way. We speak of a ruffled temper; and there is hardly a finer example of the expressiveness of language than the German terms, "widerhaarig" and "kratzig."

Smooth articles are liked.

F., 21. I like to rub my hand on a velvety surface.

In such cases about all we can say of the matter is that the "feel" of certain smooth materials is pleasant. There is, of course, a great deal of variation from person to person, just as there is in case of experiments on the grading of tastes and odors according to pleasurable feeling-tone. Not all persons, for instance, like the "feel" of velvet. A girl writes:

F., 18. I cannot bear to touch velvet. I feel the chills running up and down my back.

Filmy goods have a distinctly pleasurable feeling-tone. They are said to give a feeling of gracefulness, of lightheartedness.

F., 18. I feel as if I wanted to dance.

This is especially true of light gauzy stuffs and laces. The effects are not all reducible to lightness and absence of heavy pressure. The total state of consciousness is very complex and hardly analyzable. There are elementary æsthetic reactions to outline, motion, variety (broken surface of laces, etc.). There are overtones of Einfühlung, self-feelings of various kinds, general associational effects, and that particular kind of association which may be called symbolic transference of meaning. A filmy dress means a ball or some social function; slipping on a smoking-jacket means relaxation; putting on evening dress means a certain formal, correct sort of behavior. Of the social side of this we shall speak later. From that point of view its equivalent is acting up to social expectation, a task to which the histrionic in man readily and easily responds.

Silk occupies a peculiar position. In most cases the "feel" of it is said to be agreeable. In some instances it suggests high rank, being well dressed, etc. To some the rustle of silk is decidedly annoying, especially the pronounced rustle of very stiff silk skirts. It grates on the senses; is of a harsh quality. It is felt to be as disagreeable as a scratching pen or a knife scraping across a plate. Still, the great majority find the sound of rustling silk highly agreeable. A two-fold division must here be made.

1. *Direct pleasurable quality:* As when the rustle of silk is said to be soothing.
2. *Pleasures of association and suggestion:*

F., 17. The rustle of silk suggests dignity and high rank.
F., 18. It reminds me of the rustle of leaves in the woods.

Furs have no very marked diffusive effect on the self, except in a few cases, as when a girl says that furs make her feel too much like an animal. The effects are specific:

(1) Direct pleasurable feeling of touch.

(2) Temperature and contact sensations.

Furs are disliked because they give a hot, choked, stuffed feeling.

(3) Suggestion, association.

They are held to give feelings of wealth, pride, of being well-dressed, of the lady-like and elegant.

Question 5, or rather the last part of it, deals with preferences and extravagances in articles of clothing, and is of minor importance. The answers bring out some striking facts. The following is the scale of preference:

Shoes	29%	Underwear	6.9
Gloves	20.8%	Jewelry	6.1
Neckwear	13.1%	Ribbons	2.8
Hats	8.4		

Surprising is the marked preference for shoes and gloves and the low percentage of jewelry and ribbons.

{ Question 15. Masks, theatrical costumes.
{ Question 8. Dressing up.

Of the answers to 15 received only a small proportion, 20%, deny any change in personality due to masks, theatrical and masquerade costumes. The answers are rather general and lacking in details.

F., 22. I don't feel like myself.
F., 19. I feel like a different person when wearing a mask.
F., 18. I feel as though I had left myself behind; feel like the person I am impersonating.

Very pronounced is the ability to take an imaginary part better in a theatrical costume. The latter acts as cue.

Feelings of strangeness and boldness are perhaps most closely connected with the wearing of masks. A small percentage of such cases is traceable to the sense of having one's identity well concealed and opportunities for reckless acts. It is like bobbing up to the height of one's spirits because the social pressure,—of possible censure, restraint, etc.,—is removed. And the feelings of silliness and self-consciousness confessed to by some of the girls may be explained as the dread of doing the unconventional or as helplessness. But there are other factors; instances where there is a direct and marked change upon putting on a mask or a theatrical costume. Our voices seem strange to us. There is an inrush of new feelings, a new dignity, a proud bearing or a boisterous entering into one's part. To what extent costumes suggest the playing out of a new personality depends largely on one's histrionic talent. Children have it to a marked degree. Their personality,—if we mean by personality a complex interrelated system of habits, meanings, values, feelings of intimacy, etc.,—is only partly organized; if a new element enters through some channel of suggestion it is apt to reorganize the whole system or at least to affect its general tone. Clothes very often give the needed dramatic cue. Emotional disturbance of some kind, of course, facilitates such an incursion. People of an impulsive temperament at a gathering where spirits are high unconsciously lapse into mimicry and impersonation. This again is very noticeable in children. Again, when the content of the self is flexible in the sense of intimacy easily transferred to other experiences, mummery is entered into recklessly. Witness the extent to which masquerades, carnival processions, etc., have diminished in the last five centuries, and the corresponding growth of the idea of personality. In line with this is the defective exhibition of personality characteristic of many actors.

Question 8 brought few answers because of the ambiguity in the term "dress up." Wherever this is taken in the sense of disguise or acting a part, the answers were to the effect that as children the girls were very fond of dressing up, taking the parts of "grown ups," wearing long skirts, playing at mother or impersonating favorite characters from their story books. In some cases the swish of long skirts along the floor was a source of pleasure.

Question 2 brought substantial returns. The fact to be established is the experience of a general change of personality. The experience is quite familiar. Putting on a light tie or a white vest will often cause a distinct sense of changed personality. The question takes up the effect of evening-dress and outing-costume. Only 10% of the answers claim that there is no effect.

Let me first give a few of the answers which plainly show the contrast of effects.

F., 21. In evening-dress I feel uncomfortable, gotten up for show; in an outing costume I enjoy a delightful sense of freedom.

F., 19. In evening-dress I feel unreal, like living in a different world; in an outing suit I feel exhilarated, free, younger, particularly glad to be alive.

F., 19. There is a slight change in my personality. I feel more dignified and grand and feel that all eyes are turned on me.

A social check of this kind—a desire to win emulation and the dread of criticism and notoriety—is responsible for the uneasiness expressed. Some of the answers speak of a tendency to pose. This shows social self-seeking in an interesting light.

Let us now turn to the change of personality in an outing costume.

1. *Sense of greater freedom of action, of movement.* The following expressions are used: unrestrained, stronger, impatient of restraint, more ready to talk, unconventional, ready for anything reckless, more natural.

2. *Rise in animal spirits.* The terms gay, jolly, joyous, etc., are used.

F., 18. I feel like running, jumping.
F., 18. I am boisterous, swing my arms.
F., 17. I feel Bohemian; like a tom-boy.
F., 24. Life seems to me worth living.
F., 19. I feel a rise in my animal spirits.

3. *Naturalness, self-forgetfulness.*

F., 20. I am more natural and able to think and act as I please.
F., 18. I forget all about myself.

4. *A sense of a different and more primitive level of personal responsibility.* This fact of having an "I don't care" feeling, of being "less dignified and prim," less responsible, is touched

on only casually in the answers. Two converging lines of explanation of such a state of mind are possible. One is that an outing suit with all its associative setting carries less of social decorum with it, and allows a resiliency of spirits which the ordinary social checks make impossible. In other words there is a let-up in social self-seeking, the whole matter being, as in the case of masks, a lapse to a more primitive state of existence when — rather elaborate ceremonies apart — there was less minute social regulation. Think of all our modern restrictions and refinements of modesty!

The approach from the side of social checks is, however, not the only legitimate one. The lessening of the sense of responsibility may be explained in other than purely social terms. There is a slackening of self-restraint quite independent of social sanctions. We may use as our point of departure Lamb's happy suggestion that much of the æsthetic enjoyment of comedy is due to the chance given the spectator to throw off the burden of his moral consciousness. There is no doubt that all our higher life, even if we take higher merely in the sense of more complex and elaborate,—is built on some subordination and regulation of the more primitive impulses. Even the most schematic purposeful activity implies that. For instance, what we call love with its idealizing factors, emotional overtones and sympathetic resonance is possible only at the expense of the limitless assertion of sexual impulses. At present the consciousness of the normal socialized and moralized individual represents such a system of checks and counterchecks among the impulses. The regulation machinery is the result of ages of inner conflict. To the degree to which this means not an extinction of the primitive impulse, but merely a narrowing of its sphere (as in the animal appetites of the normal man), to that degree will the regulation at times become irksome. At such times the effort is felt distinctly. This dualism is especially characteristic of our moral consciousness. There are times when we feel the burden of it all and long for a state prior to self-regulation. Excitement, emotionalism, more or less purposeless motor activity all favor the breaking loose of an impulse. In comedy, at least in its older Bacchanalian form, and in our modern farce we have just such a more primitive stratum: license, ribaldry, the unchecked appeal to animal spirits, a topsy-turvy world. In carnival crowds we have the same thing. There is an aimless, reckless rushing about;—characteristic is the swooping down of a crowd of merrymakers upon a serious-minded passer-by and the whirling him along.

Before discussing the phase of this phenomenon most important to the subject in hand, we must insist on one characteristic.

It is largely a contrast-effect, *i. e.*, the consciousness of having given the slip to social or personal standards is presupposed. It is of the nature of a lapse. Much, for example, of what we call the joy of living is the throwing off the burden of civilization. It is interesting to note the interrelation of primary and secondary feelings in the peculiar experience we sometimes get after a warm bath: a luxuriating in bodily sensations, a massive sense of physical well-being, a consciousness of relaxation and expansion which the German phrase "die Glieder lösen" hits off pretty well, and a sensual delight in one's body as body. The lapse-character of the experience is largely responsible for such feelings. Very significant is the fact of moral disapproval passed on such experiences by a developing moral consciousness. This is hinted at in the answers to question 15 which object to very loose clothing. This moral overtone may be found in one's own experience. It seems to me one of the most striking of all the vagaries of consciousness, that letting oneself go physically should be connected with the morally undesirable, and that what is bracing to the body should connote a moral getting oneself together. Loose negligé costumes, wrappers, soft, yielding slippers, slouch hats carry with them, at times only, a faint suggestion of moral slackness. On the other hand, shoes tolerably stiff, snugly fitting clothes or gloves, stays of some kind at times suggest moral terseness and firmness. The social check factor is present but subordinate to the self-respect factor. One further suggestion must be offered. The moral judgment passed is not generally passed on the natural as such, but rather on the slackening of regulation; it involves the suspicion that a state of sensuous relaxation may, if unchecked, easily develop into "raffinements" of the emotional or sensual type. Luxury in clothes is condemned on the same ground.

Let us now return to the question of lapse. The phenomenon is not, of course, evident if putting on an outing costume means merely going through a routine of daily exercise. But if it means romping about, shouting, spontaneous exercise of muscles, the characteristic emotional relief phenomenon sets in. In some cases consciousness is very complex. There is a delicious feeling about tripping up one's usual sober self ("How shocking it is! I wonder whether I shall have the courage to do it"). There is a blending of the familiar and the unfamiliar, the shrinking and the daring. It is like exploring a new domain for the self. We sometimes experience an impulse to do something shocking, to laugh out loud in church, for instance. That is an insurrection against conventional restriction. Or we like to shock ourselves. That is an insurrection against the regulation of single impulses. The suggestions of an outing costume,—free movements, spontaneous rather than strictly purposeful activity, etc., are all in that direction. Just as changes in clothes may facilitate such a lapse, so they may become steadying forces. This is true of the soldier's uniform. *Esprit de corps* grows up in connection with the thought of membership. It deepens a man's sense of his duties.

GROUP III. EFFECTS ON THE SELF AS A SOCIAL REFLEX PHENOMENON.

This can hardly be separated from Group 2. Some changes in self-feelings, however, are more readily interpreted as reflex phenomena of social intercourse, and it is with these that we are to deal.

Question 8 clearly brings out the fact that children are not normally conscious of their clothes and that any such consciousness is the result of remarks on the part of their elders. But such sensitiveness to the estimates of our fellows is brought out in a much more striking way in Question 1.

1. *As to being well-dressed:* It is hard to choose from the wealth of answers. The following is a rough grouping.

a. *Greater sociability:*

F., 20. I mingle more freely with others.

This manifests itself (1) as ease, rise in spirits, and (2) as the consciousness of a free and equal footing with others.

F.,20. I have a feeling of equality.
F., 19. I feel able to meet any person.

b. *A feeling of being under social surveillance and of having met its demands successfully.*

F. 18., When well-dressed I am more careful of my speech and manners.

This also appears in such phrases as "walk straight and stiff;" "like to be seen." As a result we have a heightened sense of power and worth.

c. *Sense of power:*

F., 18. I feel as if I could face the world.
F., 28. I feel equal to meeting any one.
F., 22. I feel at my best.
F., 18. I feel able to cope with any situation.

d. *Sense of worth:* This is closely connected with the sense of power as is attested to in the basing of social regeneration on such species of control as property and work.

F., 17. I feel worth more.
F., 18. I have more respect for myself.

Interesting are the moral connotations.

F., 19. I feel somewhat morally better.

This moral or quasi-moral significance, due to the individual working over of social standards, is more striking in case of being ill-dressed. Note the feeling of shame attaching to a breach of etiquette.

2. *As to being ill-dressed:*

a. *Unsociableness.*

F., 18. I do not like to have anybody see me.

b. *Unpleasant feelings:* depressed, distressed, cross, disagreeable.

c. *Self-Consciousness:* uncomfortable, conspicuous, nervous, fidgety, bashful.

F., 21. I must constantly tug at my clothes.

d. *Excessive sensitiveness to possible observation:*

F., 19. I am afraid of being laughed at.
F., 18. I am afraid people will think less of me.

e. *Comparison with others; envy:*

E., 19. I feel as though somebody else were better dressed.

f. *Lowering of one's self-esteem; loss of confidence in oneself:*

F., 18. My opinion of myself takes a decided drop.

It needs no argument to show that all such states are socially grounded, to be explained in terms of self-seeking.

Question 1. Shabby shoes and gloves: That we are particularly conscious of hands and feet has already been noted (mobile; frequently cross line of vision). There is a diffusive quality attaching to shabby shoes or gloves.

F., 17. I feel as though everything were shabby.
F., 18. Shabby gloves are as bad as a shabby dress.

But in addition there is the dread of unfavorable comment.

F., 19. I imagine I shall be criticised.

Hence there is a tendency to "hide one's hands," to "keep them out of sight."

Question 4 brings out this fact even more strongly. The topic is hidden defects in clothing. Most of the girls acknowledge a difference, and may be grouped as follows:

1. *Such as are conscious of a possible exposure and a resultant social disapproval.* This is by far the largest group, and reveals in an almost pathetic way the degree to which our worth estimate of ourselves is dependent on the general social currency. This seems to be especially true of women.

F,, 17. I imagine somebody will surely see or find it out.
F., 19. What would people think if I were taken to a hospital?
F., 19. Something might happen and somebody might see it.

The dread of exposure through accident is especially strong. There result a centered attention, a haunting feeling.

F., 18. I imagine every eye directed to the spot.
F., 17. I feel as though eyes were piercing through and noticing it.
F., 18. I feel like touching it.
F., 19. I am always thinking about it.

This standing out in consciousness may reach very annoying proportions. Such experiences are common and easily verified.

In some cases there is a craving to expose the defect.

F., 17. I feel guilty, and desire to expose it.

This may be plausibly explained in view of other similar phenomena as an over-anxiousness to defend oneself, and thus to break by anticipation the force of possible adverse criticism.

2. *Guilt*, *loss of self-respect*, *moral self-judgment.*

Even here the social reflex factor enters in the guise of the thought of raising expectations one is not prepared to fulfill.

F., 18. I feel deceitful.
F., 21. If my underwear is soiled I have a feeling as if I were dishonest.

In the following example the self-reference factor is supreme.

F., 19. I had a certain garment which was somewhat soiled and worn. The thought came to me while I was helping alter it that it would be wrong to wear it after its being turned. I could never bring myself to the idea that it was right, and I have finally given up wearing it.

Question 9 shows us a very closely related phenomenon, the passing rather than the accepting of judgments.

F., 19. As a rule I like people better when they are well-dressed.
F., 19. I often form hasty opinions about dress.
F., 21. I judge character by the style of apparel.
F., 19. Clothes affect my first impression.

There is scarcely a dissent from this general opinion. Still two modifying factors are brought out.

1. The manner of putting on the dress, neatness, taste count more than the material.

F., 21 Quality does not affect me; the judgment rests on the people's manner.
F., 17. Only when loud, untidy or exceptionally careless.

2. Such judgments are generally passed on strangers. They are based on first impressions; and do not affect people we know well.

F., 18. Yes, when I first met them, but not after that.

Questions 14 and 6 belong in this connection, for the wearing of ornaments is a form of social self-seeking. Question 14 relates to the wearing of ornaments.

Of the answers 14 state unreservedly that they like ornaments. They are pretty, pleasing to the eye, etc. 19 do not care for ornaments. Some would limit ornaments to special occasions. About 40 insist on simplicity.

F., 18. Jewelry should not be worn as if for public advertisement.
F., 19. Too many ornaments show lack of good taste.
F., 18. It spoils the effect of dress to have too much lace and ribbons.

Now these answers seem at first glance to show the very opposite of social self-seeking. Contrast them with the delight of the savage in beads, trinkets, ribbons. Think of the ridiculous expressions of the ornamental enumerated in Frobenius' Flegeljahre der Menschheit. Ornament represents a means of self-assertion and distinction. Certain negro chieftains have the privilege of wearing a lion or panther skin. Ornament is also a visible expression of wealth. Stanley tells us of a negro king who had his wives carry around their necks metal rings weighing from 40 to 80 pounds.

How account for the character of the answers in view of such strong social forces, emulation, pride, vanity, etc. The delight in ornament still exists in full force among the uneducated and the frivolous. In the answers such social self-seeking is checked by secondary factors of social self-seeking.

1. Jewelry resists incorporation in the self more strongly than do clothes. This applies also to trimmings, cuffs, collars.

2. Even clothes are felt to be insufficient means of self-assertion. Such assertion lacks permanence. Substantial interests are sought, and man turns savagely against decking himself with trinkets. Excessive adornment now acquires the flavor of vulgarity; it is too much like carrying one's personality to market.

3. Dread of being conspicuous:

a. Often this is nothing but the excessive shyness and self-consciousness of adolescence.

b. In most cases it means the creating of new social demands.

The desire to avoid the unfavorable comment of freakishness, outlandishness is very strong. The desire for uniformity, at least with one's group, checks the desire of standing apart. The country lad satisfies this craving for distinction by wearing flashy colors, etc. It is his attempt to set himself above his class. A man cannot help playing to certain groups. But the man who seeks distinction in the way instanced soon finds that his differentiation from his class throws him together with the upstarts, "sports," frauds. It is the instinctive recoil from such a possibility which accounts for dislike of excess of jewelry and of imitations. All answers which insist on the vulgarity of the thing express this.

Then we see played a game of shuttlecock and battledore between the principles of uniformity and differentiation.

4. Acknowledgment of the authority of certain social regulations even in matters of dress.

This involves the growth of a group-consciousness far above the mere huddling together kind. This is seen best of all in the evening dress for men with its socially prescribed rigid uniformity. The same motive is a work in the impersonal form of certain social courtesies, formal invitations in the third person. A sentiment of voluntary submission to group-standards has grown up.

Question 6 discusses imitation things of all sorts. 66% of the answers express dislike of imitations of all kinds. They are said to awaken disgust, contempt.

In some cases a difference in degree is to be noted between disapproval of imitation jewelry and lace.

About 25% disapprove of jewelry but not of lace or other imitation things.

F., 18. Imitation lace is all right; imitation jewelry suggests commonness.

F., 18. Imitation jewelry I cannot bear; imitation laces are often so beautiful that their beauty excuses them.

Let us now return to those who express utter condemnation. The reasons they give fall under two heads:

1. *Imitations suggest commonness, poor taste, vulgarity.*

F., 20. It shows poor taste to wear them.

F., 20. I feel cheap and tawdry if forced to wear imitation things.

2. *They raise false expectations; suggest deceit, dishonesty.*

F., 18. To wear imitation jewelry is like telling an outright lie.

F., 18. I feel hypocritical.

F., 17. I dislike to wear them. They falsely make people believe what they are not.

Question 15, which treats of the "lies of clothing," may be discussed here.

The answers range from reserved justification to utter contempt. Padding is justified as follows:

F., 19. It is all right; it is a person's duty to look as well as possible.

F., 18. Padding is permissible to hide some marked physical defect.

Often, however, there is a moral disapproval, closely akin to that of imitation things.

F., 19. Padding one's figure and tight skirts are immoral. A woman that pads is disgusting.

F., 20. A person should be honest in dress as well as in everything else.

F., 22. Padding is an act of deception.

Evidently raising false expectations, attempting to impress people, etc., are considered immoral. It is this fact that under-lies our aversion to imitation jewelry; otherwise we should look with the same disfavor upon imitation studs or hat-pins with false stones as we do upon jewelry meant to impress.

Questions 5 and 10 touch on the very interesting subject of fashion.

Question 5 brings out the fact that fit and style owe their imperativeness to social demands. Most of the girls are particular about both.

Dread of being conspicuous is the chief factor. It insures a general conformity to style and checks the following of extremes of fashion.

F., 28. I do not like to be conspicuous by being out of style.

F., 19. I am very particular about style, otherwise I think I am attracting attention.

F., 18. I always detest wearing anything the very latest.

F., 20. Yes, but not conspicuous styles.

Question 10 touches on the indulgence of individual preferences at the expense of style. Over half of the number state that they do not indulge such preferences, while with the vast majority of the others such preferences turn rather on subordinate things, such as ribbons, color of dress, etc.

F., 21. As fashion changes, I change also.

F., 19. I never indulge any preferences contrary to style.

F., 18. I don't like the latest sleeve but I had it put on.

While many acknowledge (13, Dress-reforms) that fashions change too often; group-judgment, as a rule, proves too strong and often seriously interferes with æsthetic judgments. Occasionally we find a note of independence:

F., 19. My motto is: "If the style is becoming, wear it," rather than "Anything as long as it is the style."

The important factors are imitation, social corroboration of tastes, craving for newness. These are quite as important as those suggested by v. Jhering whose philosophy of fashion is stated in terms of an attempted self-differentiation of the upper classes.

III.

It is, perhaps, hardly serviceable to sum up and draw conclusions from what are frankly acknowledged to be suggestions of an unsystematic kind, based on very limited material. Attention has at least been drawn to two factors in the far-reaching effect of clothes on the mental life.

1. *Simple:* such as any ordinary psychology must take account of.

2. *Complex:* (a) such as are found in subtle personal reac-

tions; (b) such as are found in the operation of standards of group-judgment.

This study may be supplemented in many ways, and it is my purpose to outline very briefly what is needed towards such supplementation and to suggest several problems of a very promising kind.

1. Simple psychological experiments with a view towards ascertaining the sense-factors in the psychological effects of clothes.

2. A study of more complex factors, such as emotional displacements, æsthetic judgments, changes in personality.

3. Studies in abnormal psychology with a view towards connecting any changes in the clothes-consciousness with the well-known insane delusions in the body-consciousness.

4. A study of sex-differences. This should prove one of the most fruitful lines of investigation.

5. A study of differences due to age, station, interests, etc. A questionnaire like the one discussed does not give the whole story. Generalizations would be one-sided. On the other hand the peculiar part clothes play in the consciousness of actors or tailors or uniformed officials should be noted and investigated. At this point attention might be drawn to the investigation of clothes as steadying forces or regenerative agencies of a social kind, as in reform schools or as facilitating social organization (badges, insignia, uniforms).

6. A study of clothes from the point of view of social psychology. This would mean an exhaustive analysis of group-estimates, group-standards, etc.

7. An account of social symbolism in dress and its relation to emotional states. This would mean a discussion of membership insignia, national costumes, characteristic colors and styles, mourning and bridal costumes, professional cuts, etc. Valuable hints have been thrown out on these points by H. Schurtz, Urgeschichte der Kultur.

8. An anthropological account of dress and ornament (*cf.* H. Schurtz, Grundzüge einer Philosophie der Tracht).

9. An adequate historico-psychological account of costumes, fashion, etc.

10. A genetic account of clothing with the view towards a genetic theory. The latter can be done only on the basis of a vast array of materials, but should prove very valuable, since it in turn would give us the key to many curious facts.

It is for the purpose of stimulating an investigation of the many problems instanced that these suggestions on the very complex interplay of psychological effects of clothing are set forth.

The following bibliography though not used in the preparation of the foregoing paper has been added by Dr. Theodate L. Smith, at the author's request, for the use of those interested in the historical development of the subject.

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IMAGINATIVE ELEMENTS IN THE WRITTEN WORK OF SCHOOL CHILDREN.

By S. S. COLVIN and I. F. MEYER, University of Illinois.

Several years ago a large number of compositions written by school children were collected by the Department of Psychology of the University of Illinois. These were secured in response to the following circular letter addressed to superintendents and principals of various schools in the State of Illinois:

Dear Sir:

I wish to find out some of the principal interests of children as shown in their regular written work in school and take the liberty of soliciting your assistance in collecting material for that purpose. I desire to get compositions from each of the pupils (as far as possible) of the four upper grades of the grammar school, and of all the grades of the high school, in your town. It is important for the purposes of the study that these compositions should be prepared as a part of the regular work of the pupils and that they should not be revised or corrected by the pupils after the papers have been submitted to the teacher. The pupils from the grades are to select one of the following subjects from which to write:

A Funny Story I Have Read or Heard.
What I See on My Way to School.
The Story of a Poor Boy or Girl.
How the Flowers were Colored.
A Fairy Story.
A Good Joke.

The subjects from which the high school pupils are to select one are as follows:

A Voyage in an Air-Ship in the Year 2000.
How the Flowers Got their Colors.
What I can See with My Eyes Shut.
My First Visit to the Theatre.
Adventures of a School Desk.
Displays in the Shop Windows.
A Laughable Story.
A Poor Family.
A Fairy Story.
A Comical Character.
The Woods in Autumn.
Jokes I Have Played.

I desire the work to be entirely spontaneous and original, with no suggestion as to content or method of treatment, and particularly with no hint on the part of the teacher or parent as to choice of subject. Each paper should have the full name of the pupil, the age and grade. Thanking you in advance for your assistance in the matter, I am,

Very truly yours,
STEPHEN S. COLVIN.

Later 3,000 of these compositions were studied and the results were expressed in the form of tables and curves. The object of the investigation was to obtain data on the growth of the imagination in school children, and its relation to other elements in their mental life. A record was made of the visual, auditory, tactile, pain, olfactory, gustatory, organic and muscular images among the more simple forms of imagination, while the more complex types were studied under the heads of Scientific, Fairy Story, Nature Myth, Heroic, Dramatic, Religious and Melancholic images.

The first eight types are self-explanatory. The remainder require further comment. Under scientific imagination were considered those images which related to invention, discovery, the construction of machines and devices and the uses of electrical and other natural forces. The fairy story and nature myth concerned that class of imagery which had to do with elves, pixies, gnomes, goblins, etc., and with the mythopoeic fancies common to primitive races and to children. Under the heroic were considered those images which related to ideas of magnanimity, self-forgetfulness, courage and devotion; under the dramatic, striking situations, stirring events and climaxes; under the religious, the supernatural and the devotional; under the melancholic, feelings of sadness and depression. These latter categories were not arranged with any attempt at exact logical sequence. They were rather selected because of the relative prominence or importance of these elements in the compositions studied, and because of their bearing on the known fact of the mental growth of children.

The grading of the various papers under the categories described above offered a difficulty at the outset. An exact grading was manifestly impracticable. To have attempted to indicate in per cent. the absolute value of any of the imaginative elements found in a composition would have been little less than absurd. To say, for example, that one composition contained fifty per cent. of visual, another thirty per cent. of auditory, or a third ten per cent. of mythopoeic images would be to indicate an impossible exactness. On the other hand, it was not found difficult by dividing the compositions into six grades of excellence, to judge with considerable nicety the class into which each should fall for any given element. After some practice facility was gained in judging whether a composition, for example, belonged in the fourth grade for visual imagination, in the third for tactile, in the fifth for dramatic imagery, and so on. Those compositions which contained the lowest amount (quantity and quality both considered) of a type of imagination were put in the first grade for that type, those containing the highest, in the sixth grade; while other degrees of excellence were tabulated between these extremes. In the actual working out of the study it happened that compositions that showed a lack of merit in respect to a particular type of imagination fell in one of the first three grades, while in the three higher grades fell those compositions whose merits in respect to a type were more positive than negative. Each category was graded on the same general scale in order to give a basis of comparison between the various types.

In connection with the study of these types of images a tabulation of the formal correctness, the humor, the feeling and the logical arrangement was made in a similar way. The results thus secured show several interesting and apparently significant facts.

The curves for visual, auditory, tactile and motor types of imagination ran much higher than did the pain, gustatory, organic and olfactory. As would be expected the visual on the whole stood the highest for both sexes, though the auditory was a close second and the motor and tactile not greatly inferior. The averages in grades for the entire eight years being as follows: Visual, boys, 4.84; girls, 4.81. Auditory, boys, 4.10; girls, 4.56. Muscular, boys, 4.06; girls, 3.67. Tactile, boys, 3.50; girls, 3.66.

The curves representing the pain, gustatory, organic and olfactory types ran much lower as above stated, and showed no such approximation as did those of the four higher types. The per cents. for these lower forms were as follows:

Pain, boys, 1.74; girls, 2.04. Gustatory, boys, .82; girls, 81. Organic, boys, .54; girls, 84. Olfactory, boys, .096; girls, .080.

The most striking feature of the curves representing the first four types of imagination is the marked decline at about the onset of puberty with the single exception of the visual type, which shows a steady rise for both boys and girls through the entire eight years studied. This fall, though in a less degree, is likewise to be noted in the four lower types, with the exception of the olfactory, which, however, runs so low for all the years that it may be practically ignored. In the case of the higher types there is a partial recovery during the high school years, but in the case of the lower types the decline continues without recovery. The same general tendency of the curve to fall at the beginning of the adolescent years, is further to be noted in the fairy story, nature myth, heroic, dramatic, and religious types of imagination. The scientific type, particularly with the boys, and the melancholic, which hardly exists before the adolescent years, alone show a rise. Thus it is seen that out of the fifteen varieties of imagination dealt with in the study all but four show the fall at about the beginning of adolescence and of the four that show an opposite or neutral tendency, one, the olfactory, is so slight for all grades as to be of little importance in the tabulation. The cause of this falling off is in part to be explained, I believe, by the general upheaval that accompanies the onset of puberty. The low grade stability of the preceding years is broken up. Old brain centres cease to function, or at least function not actively or function in different directions. Thus images fade and may die out, or are replaced, as the adolescent years progress and renewed stability comes, by others. The visual escapes this tendency because it is not so deeply centered in the affective being of the child, which suffers the greatest upheaval. It is more intellectual and less vital. It is in a sense formal and external ; it is an interesting fact that the curves for formal correctness and for visual imagination run practically parallel for the boys and nearly so for the girls during the entire eight years under consideration. This probably means that the visual imagery has become devitalized and symbolic. It is a significant fact for education to consider.

Another cause that may be operative in the fall of the curves is the increased reticence of expression which comes in early adolescence, especially in connection with the inhibiting influence of school discipline and environment, to spontaneity. As far as these latter causes hold good the results obtained in the present study would show rather the imaginative elements in the school work than in the mind of the child as such. Since, however, the enquiry was primarily directed to the conditions of imagination in the school the facts sought are not obscured by this circumstance.

The explanation for the rise of the curve of scientific imagery is to be found in the immense interest that the American boy in particular takes in all forms of invention and discovery. This is so strong that it overcomes the tendency, potent for the most part, toward the disintegration of the image at the onset of puberty.

A further study of the curves reveals the fact that the visual type of imagination begins considerably higher for the girls than it does for the boys, but that its growth is much more rapid in the grades for the boys. In the high school the two curves are practically identical. The most rapid rise is at puberty when the average age of the boys was 14.77 years and the girls 14.56.

The auditory type shows a very close parallel for both sexes, but is with the girls considerably higher during the entire period studied, the average grade for the eight years being boys 4.10 and girls 4.56. For both boys and girls there is a very gradual increase in the fifth and sixth grades, with rapid accentuation in the seventh, a slight growth in the eighth, a great falling off in the first year of the high school, with a rapid subsequent recovery and a sharp rise at the end. The decline at about the fourteenth year is to be accounted for, probably, in accordance with the general explanation offered on a previous page, the growth from the fifteenth to the eighteenth years is in accord with the awakening consciousness at adolescence. Since auditory images are closely connected with the sentiments the curve rises and falls in accordance with the fundamental changes in the child. Musical sounds in particular and the cadence of the human voice are potent influences in the life of the adolescent in his early teens. Sounds of nature, too, have a deeper meaning, and, as Dr. Hall expresses it "speak a language to the heart."

The curve for the tactile image is at its maximum for both sexes at about the onset of puberty. It then falls very markedly, and recovers but slightly during the high school years. The boys' average in the grades is .39 higher than in the high school. The fact that the tactile image decreases in the high school is in agreement with experiments performed by Weber and Mano. Weber found tactile sensation to decrease with growth.

The motor images reach their highest point for both sexes in the eighth grade where the average is 4.54 for the boys and 4.42 for the girls; in the ninth they fall very markedly, reaching 3.71 for the boys and 3.38 for the girls. In the second year of the high school the boys show a decided recovery and a return in the last year to a point not much below the average for the grades, with the girls on the other hand the curve sinks still lower in the second year and recovers but slightly in the last two years. Through the grades the boys find this their most powerful form of imagery. The average for the girls in the grades is also high. The marked fall of the curve particularly in the cases of the girls, is entirely in harmony with the physiological and psychical changes at the onset of puberty. The languor and day-dreaming attending early adolescence is little conducive to the development of motor images.

Pain images, while running much lower than any of the four types mentioned above, are comparatively high, the average grade for the entire eight years being 2.04 for the boys and 2.21 for the girls. The curves for both sexes show close similarities. There is a marked fall at puberty and a slow decline thereafter for the boys, for the girls there is a slight tendency to rise during the last year of school. This is in accordance with a number of previous studies, which go to show that sensibility to pain diminishes for both sexes as age increases. There is also a natural reticence to expression of pain, especially among boys as they approach adult life, it being considered unmanly to show that pain is felt. There is reason to suppose that with the onset of menstruation, one type of pain imagery increases, and this should tend to make the curve rise in girls; this tendency, however, is checked in expression by the opposite one of diffidence, and doubtless has its effect in cutting down pain images in the written work in the school.

The curve for the gustatory images runs considerably lower than does that for pain, and shows a continuous fall from the sixth grade for both sexes. The curves are practically parallel throughout their entire course, that for the girls remaining higher than that for the boys. The average grade for the boys during the four years in the grades is 1.38; for the high school .82 For the girls the corresponding grades are 1.67 and 1.08 respectively. It is natural there should be a diminution of these images as the child passes out of the mere vegetative self. That they preponderate more in the girls than in the boys is largely to be explained, I believe, by the fact that woman is nearer the race; she approximates more closely to the fundamental type; she is less specialized and is nearer the primitive biological norm.

The term organic type of imagination is here used as referring to images in connection with internal bodily changes. It runs somewhat lower than the gustatory, but follows a course very similar. It is considerably higher for the girls than for the boys, a circumstance which may be possibly explained by the fact that the affective processes in girls are more intense than in boys. The fact that it is lower in the high school than in the grades is to be accounted for possibly on the ground that the strong emotions of adolescence, and the organic changes accompanying them, do not readily find expression, while in the pre-adolescent stage the more simple emotions do find such expression.

The olfactory images run very low throughout the entire eight years studied. There is in the case of the boys, however, a positive increase after puberty, which may be in part accounted for when we consider the close connection between odors and æsthetic emotion and also the sex life. The fact that olfactory images in the case of the girls seem stronger before puberty than afterwards may be explained to an extent by the circumstance that odors and tastes are almost indistinguishably connected, and since the girls show a more marked gustatory preference, it would be natural that they should show an olfoctory preference as well. The fact that the smell images fall off in the case of the girls just at the onset of puberty may be explained by the breaking up of the old nutritive self, while the partial recovery in the last two years of the high school may mean that smell images have come to have for the girls, as well as for the boys, an æsthetic and a sexual, rather than a mere nutritive, value.

Highest in grade among the more complex forms of imagination comes the heroic. It stands the highest for the boys in the earlier years and the later years studied, while during the last years of the grades and the first years of the high school it shows a decided decline, being at the lowest when the average age for the boys is 14.77 years. With the girls there is a steady development with only a slight fall during the first year of the high school course. For both boys and girls it seems to be a more constant form of imagination than many others, and one that stands the shock at the onset of puberty better. The average for the boys in the grades is 1.19, for the girls 1.20. In the high school the figures are 1.11 and 1.41 respectively. For the dramatic imagination the figures are somewhat similar, though slightly lower; the girls here showing a more marked superiority over the boys than in the heroic. This may be accounted for largely by the greater intensity in girls of those feelings which centre around these two types of imagination. In this connection may be mentioned the study of Dr. Edwin G. Dexter[1] in which he shows that on the stage public recognition comes much earlier for women than for men.

The curve representing the growth of the scientific imgination shows a rise for both sexes during the first year in the high school. The average is much higher for the boys than for the girls. In the case of the former, it is for the grades .56 and the latter .32. The corresponding figures for the four years of the high school are 1.86 and .68. The highest point for the boys and for the girls alike is reached in the last year of the high school when it is 2.70 for the boys and .89 for the girls.

The mythopoeic imagination, represented by the fairy story and by the nature myth, found its greatest expression in the compositions written in the grades. The average for the fairy story in the grades is, boys, .665; girls, .930. In the high school it is, boys, .185; girls, .620. The average for the nature myth in the grades is boys, .395; girls, .570. In the high school the figures are, boys, .160; girls, .270. These figures clearly show that this type of imagination tends to disappear as the age of the pupil advances.

The curve representing the religious imagination is at its highest in the fifth grade for both boys and girls. In the case of the boys it falls off rapidly in the last two years of the grades and sinks to a still lower point in the high school. With the girls there is a general tendency to fall, though it is not so pronounced. In the face of the well known facts in regard to the religious emotions at adolescence as set forth by President Hall, Starbuck, James and others this decline means not that the high school pupil is lacking in religious emotions, but that the school environment is hostile to the expression of such feelings. The fact that there is a greater expression of such images in the grades than in the high school is to be interpreted as showing that the earlier expressions are for the most part conventional, and have not the genuineness of those feelings that belong to the adolescent ferment. The youth hesitates in an unfriendly atmosphere to express his deeper feelings, yet there should be no barrier to such expression.

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[1] Age and Eminence, Pop. Sci. Mo., April, 1904.

Melancholia does not belong to the pre-adolescent period. In the grades such images are practically absent for both sexes. In the high school they begin to manifest themselves, and are greater (more than double) in the case of the girls. Doubtless the compositions studied reveal but to a slight extent the actual intensity of the melancholic moods in both sexes. A natural diffidence, as in the case of the religious imagination, forbids its full expression in the work of the high school.

As would be expected the formal correctness of the themes improved throughout the eight years in the compositions studied, being at its highest during the last year of the high school for both sexes. There is a close correspondence between this curve and that of the visual imagination especially in the case of the girls. This may point to the fact that good visualizers have a decided advantage in the mechanical work of composition over others whose images come more largely from other fields. This, too, bears out what has been said in regard to the more formal nature of the visual type. There seems to be much less relationship between formal correctness and other types of imagery.

Logical power, like formal correctness, develops throughout the school course in the case of the girls and the curve is quite similar to that of formal correctness. This is less true in the case of the boys. Indeed, for some reason, there is an actual falling off in the last two years of the high school. This, however, must be due to some non-essential cause, and can have no fundamental significance. Logical power shows no pronounced relation to any type of imagination except the visual.

The sense of humor of both boys and girls is of a relatively low grade. The curve runs much higher for the boys than for the girls, and reaches its maximum in the seventh grade.[1] It falls decidedly for the boys in the first year of the high school course and slightly for the girls. There is considerable resemblance in the curve for the boys between pain images and humor. A connection here may be found in the fact that the type of humor manifested by the boys is largely of the teasing and bullying variety. The curve for the organic images also shows resemblance to the curve for humor, as does further the curve for motor images. There seems to be no clear relation between humor and the other types of imagination.

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[1] This is in entire accord with previous studies on the sense of humor made by the writer.

The curve representing the course of feeling runs high for both sexes and shows a constant growth. It is higher for the girls than for the boys. As might be expected there is a resemblance between the curves for feeling and for the heroic and dramatic imagery. Although the growth is constant it is not rapid. The average for the grades is: boys, 4.13; girls, 4.33. For the high school the corresponding figures are: boys, 4.58; girls, 4.78. Between the first and last years of the high school the growth for the boy is only .17 and for the girls .33. These figures would hardly suggest the great awakening in emotional life which comes at this time, particularly when it is further known that during the four years studied in the grades the increase for the boys is .36 and for the girls .49. Evidently the repressive influence of the school environment is showing itself here.

The results obtained by the study point to certain conclusions important for education to consider. These may be stated as follows:

I. In general the imagination of school children shows a decline during the years studied. This decline may be in part only seemingly such, as in the case of the religious imagination, and may be due in a degree to an increasing reluctance of the youth to give expression to his more vital experiences.

II. Whether this decline is actual or only seeming (confined to the work of the school) it is apparent that our present system of education does little to cultivate the imagination. Indeed it must in many instances exercise a negative influence. It tends possibly in some instances to crush out the imaginative powers.

III. The only type of imagination that shows a substantial growth is the visual, and this type has doubtless become symbolic, and is devitalized. Thus, again, it is shown that our school education tends toward the mechanical and formal, rather than toward the spontaneous and vital.

IV. At the onset of puberty there is a tendency for the neurones to become disassociated and for the old images to drop out. Previous forms of imagination disappear, especially those types which belong to the "lower self." With the reconstruction of the psychic life, come the "higher" types of imagination. Here is the opportunity of the schools to appeal to the deep fundamental elements of child nature, — an opportunity sadly neglected for the most part.

V. There seems to be but little place for humor in the school work. The cruder types are the only ones that find expression to any considerable extent. This is shown by the fact that with the lessening of the pain, tactile, and organic images, there is a corresponding decline in the humorous elements in the compositions studied. The school offers no encouragement to the development of a higher sense of humor, thus ignoring one of the most vital phases of human experience.

VI. The great growth in feeling during the high school years evinces itself by a slight rise of the curve during this period ; the rise, however, cannot to any degree represent the actual growth in the affective life ; and this again indicates the repressive influence of the school work on the emotional elements of conciousness.

VII. The above may be summed up by the statement that the school puts a premium on mechanical exactness, formal expression, and rhetorical correctness. It ignores, or actually hinders, the expression of the deeper self. It educates only a part of the child.

SEX SELECTION OF MAJOR SUBJECTS UNDER THE ELECTIVE SYSTEM OF LELAND STANFORD, JR. UNIVERSITY.

By E. I. **Miller**, State Normal School, Chico, California.

With the commencement of May, 1901, the tenth yearly session of Leland Stanford, Jr. University came to an end. This ten-year period is long enough to show some of the tendencies of the experiment of free election of studies now being tried at that institution. With the desire to see what tendencies were manifesting themselves this statistical study was begun some years since and is now completed for the decennial period 1891 to 1901.

At Leland Stanford, Jr. University the student has great freedom to choose all his subjects of study; but he is particularly free to choose his major subject or department. Perhaps there are few other universities in America where so much freedom is allowed, and there are no others, certainly, where fewer restrictions in this matter exist. The student just entering the university may say he wishes to make this, that, or the other subject his major work and it is so recorded. If later the student wishes to change his major subject, that is, change from one department to another as from physiology to zoölogy or the reverse, or from history to any language or to any science or the reverse, or in fact to make any change, he may do so subject to the regulations as to quantity and kind of work required for graduation by the department newly chosen. Commonly such change may be made without any loss of time or credits save where the change is made late in the student's course and to a department widely differing in requirement from that in which the student previously worked. The major subject having been chosen the department exercises a certain control over the courses to be taken in that department and in the allied subjects or minors; but this control is frequently only nominal, the student being allowed to suit his own wishes.

So great freedom of choice being possible it is clear that exceptional facilities are afforded at this university for examination of sex selection of studies. What is it that determines the individual student in choosing a major subject? Doubtless there are many things that help decide this matter; among which are previous preparation, influence of friends, reputation of certain departments, anticipated use for the work after completion of the university career, force of precedents, natural likes and dislikes and so forth; but with the freedom of choice at entrance to the university and the facilities for changing from one department to another it is evident that at the time of graduation students are taking degrees from departments of which they have made selection, and that they have made this selection under influences as little artificial as possible with the existing status of sex relations—entirely inartificial as far as the environment of the university goes. This paper records the results of sex selections as observed at graduation. Such conclusions as may be reached cannot be absolutely, but only approximately, true; but they certainly show tendencies; and it is believed these tendencies suggest educational problems which are worthy of the most careful consideration.

It is the purpose of this paper to show how the graduates of the university are classified as to sex among the different departments, and, if possible, from such data, to suggest some inferences as to sex intellectual preferences and the possible power of such preferences to influence the course of education.

It is believed by many that the intellectual likes and dislikes of men and women are different. Some believe this is due to inherent sex qualities; others attribute it to environment and education. Although the figures accompanying this paper may give some data suitable to an examination of these beliefs it is *not* the purpose of this study to account for such difference if such difference exists, nor to make any comparison as to intellectual superiority. The terms intellectual likes and dislikes and intellectual preferences are used here with no intention of adopting either of the above views, but simply as convenient terms for use.

In pursuing the purpose above indicated over the period stated at the beginning of this paper, it was found desirable to exclude the classes of 1892 and 1893. The reasons for this are first, because these classes were very small; second, as the university did not open until the fall of 1891 the members of these classes entered with advanced standing, on work done in other institutions, many of which did not permit the elective system; therefore those students were not so free to select their major subjects as if they had been at Stanford during the entire course, because the work already accomplished would not prepare them equally well for all departments at Stanford; in order to make the most of the work already done they must take the major best suited to their preparation; third, because as women are less roving than men, there were few women in these classes. For these reasons, then, the first two classes are excluded from this study. To a certain degree these objections apply to the class of 1894, but because a large majority of the members had three years' work at Stanford this class is not excluded.

Even should their tastes tend toward law, geology, and engineering, few women are likely to enter those departments. The occupations to which those lead after leaving the university are at present such as to make them undesirable, if not impossible, fields of work for most women. And since the subjects are technical and prepare for particular fields only, this would tend to keep women from selecting them as major subjects. Therefore it seems fair to omit these departments from the study.

The following summaries show by departments and by graduating classes, first, the total number taking the Bachelor of Arts degree,[1] second, the per cent. of men and the per cent. of women taking the degree in each department. To illustrate, the class of 1896 has twenty-four graduates in the English department; of these, eight, or 33⅓%, are men, and sixteen, or 66⅔% are women. Again, the class of 1901 has six graduates from the department of Sociology and Economics; of these, all, or 100% are men, and no women. At the beginning of each summary is given the whole number in all departments, for that year, also the number and per cent. both men and women, taken separately, bear to the entire class. This is called the class percentage and is to be compared with the percentage in each department.

SUMMARIES OF SEPARATE CLASSES.

Class of '94.[2] The women constitute 29.26% of the class, the men 70.74%, the numbers being 12 and 29 respectively.

The women are above their class percentage in Latin 66⅔%, Romance Languages 100%, English 33⅓, Education 33⅓%, History 33⅓%, Astronomy 100%, Chemistry 50%, and Physiology 33⅓%.

The women are below their class in Greek 0%, German 0%, Ethics 0%, Economics 0%, Botany 0%, and Zoölogy 0%. To illustrate, the women constitute 29.26% of the whole class, but in Latin they are 66⅔% of the graduates, and in Greek they are 0%; that is they are above their class percentage in Latin and below in Greek.

The men are above their class percentage in Greek 100%,

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[1] The B. A. degree is the only one granted from any department for the first degree. Other higher degrees are granted only on more advanced work.

[2] Little or no stress is put upon the results for this year because of the small size and scattered condition of the class.

German 100%, Ethics, Economics 100%, Botany 100% and Zoölogy 100%.

The men are below their class percentage in Latin 33⅓%, Romance Languages 0%, English 66⅔, Education 66⅔%, History 66⅔%, Astronomy 0%, Chemistry 50%, and Physiology 66⅔%.

In other words the men are above their class percentage of the class in those subjects in which the women are below, and below in those subjects in which the women are above. This last statement is true for all the succeeding classes.

Class of '95.[1] The women constituted 36.13% of the class and the men 63.86%, the numbers being 43 and 76 respectively.

The women are above their class percentage in Latin 45.46%, German 37.5%, English 69.23%, Education 50%, Botany 75%, and Drawing and Painting 100%.

The women are below their class percentage in Greek 0%, History 5%, Economics 16⅔%, Mathematics 28.58%, Chemistry 10%, Physiology 33⅓%, Zoölogy 20%, and Physics 0%.

The men are above their class percentage in Greek 100%, History 95%, Economics 83⅓%, Mathematics 71.42%, Chemistry 90%, Physiology 66⅔%, Zoölogy 80%, and Physics 100%.

The men are below their class percentage in Latin 54.54%, German 62.5%, English 30.77%, Education 50%, Botany 25%, and Drawing and Painting 0%.

Class of '96.[2] The women constitute 36% of the class, and the men 64%, the numbers being 45 and 80 respectively.

The women are above their class percentage in Latin 75%, German 50%, Romance Languages 66⅔%, English 66⅔%, Ethics 100%, Education 66⅔%, Mathematics 60%, and Botany 60%.

The women are below their class percentage in Greek 33⅓%, Psychology 0%, History 14.29%, Economics 12.5%, Astronomy 0%, Physics 0%, Chemistry 22.23%, Entomology 0%, Physiology 15.78%, and Zoölogy 0%.

The men are above their class percentage in Greek 66⅔%, Psychology 100%, History 85.71%, Economics 87.5%, Astronomy 100%, Physics 100%, Chemistry 77.77%, Entomology 100%, Physiology 84.22%, Zoölogy 100%.

The men are below their class percentage in Latin 25%, German 50%, Romance Languages 33⅓%, English 33⅓%, Ethics 0%, Education 33⅓%, Mathematics 40%, and Botany 40%.

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[1] The class of '95 has represented in it the additional departments, Mathematics, Physics, and Drawing and Painting; but it has no graduates in Romance Languages, Ethics, and Astronomy.

[2] Drawing and Painting not represented. Psychology and Entomology are added.

Class of '97.[1] The women constitute 45.37% of the class, the men 54.65%, the numbers being 49 and 59 respectively.

The women are above their class percentage in Latin 63.64%, German 83⅓%, Romance Languages 100%, English 77.77%, and Drawing and Painting 100%.

The women are below their class percentage in Greek 0%, Education 37.5%, History 40%, Economics 7.69%, Mathematics 33⅓%, Physics 25%, Chemistry 0%, Entomology 0%, Physiology 28.57%, Zoölogy 0%, and Hygiene and Organic Training 0%.

The men are above their class percentage in Greek 100%, Education 62.5%, History 60%, Economics 92.31%, Mathematics 66⅔%, Physics 75%, Chemistry 100%, Entomology 100%, Physiology 71.43%, Zoölogy 100%, and Hygiene and Organic Training 100%.

The men are below their class percentage in Latin 36.36%, German 16⅔%, Romance Languages 0%, English 22.23%, and Drawing and Painting 0%.

Class of '98.[2] The women constitute 52.59%, and the men 47.41% of class, the numbers being 61 and 51 respectively.

The women are above their class percentage in Latin 90%, German 80%, Romance Languages 80%, English 76.19%, Botany 100%, and Entomology 100%.

The women are below their class percentage in Greek 20%, Education 50%, History 35.71%, Economics 0%, Mathematics 33⅓%, Physics 0%, Chemistry 25%, Physiology 41.67%, Zoölogy 50%, and Bionomics 33⅓%.

The men are above their class percentage in Greek 80%, Education 50%, History 64.29%, Economics 100%, Mathematics 66⅔%, Physics 100%, Chemistry 75%, Physiology 58.33%, Zoölogy 50%, and Bionomics 66⅔%.

The men are below their class percentage in Latin 10%, German 20%, Romance Languages 20%, English 23.81%, Botany 0%, Entomology 0%.

Class of '99.[3] The women constitute 47.59%, and the men 52.41% of the class, the numbers being 57 and 62 respectively.

The women are above their class percentage in Greek[4] 100%, Latin 75%, German 77.78%, Romance Languages 100%, English 73.92%, Psychology 100%, Education 50%, Mathematics 50%, Physics 50%, and Entomology 50%.

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[1] The Astronomy department is discontinued. Psychology, Ethics, and Botany are not represented. Hygiene and Organic Training is added.

[2] Psychology, Ethics, Drawing and Painting, and Hygiene and Organic Training are not represented. Bionomics is added.

[3] Drawing and Painting, and Hygiene, and Organic Training are not represented. Classical Philology is added.

[4] Only one graduate and that a woman. Classical Philology having been added took men from Greek and thus changed sex predominance.

The women are below their class percentage in Classical Philology 0%, Ethics 0%, History 38.88%, Economics 0%, Chemistry 0%, Botany 28.57%, Physiology 46.67%, Zoölogy 0%, and Bionomics 0%.

The men are above their class percentage in Classical Philology 100%, Ethics 100%, History 61.12%, Economics 100%, Chemistry 100%, Botany 71.43%, Physiology 53.33%, Zoölogy 100%, and Bionomics 100%.

The men are below their class percentage in Greek 0%, Latin 25%, German 22.22%, Romance Languages 0%, English 26.08%, Psychology 0%, Education 50%, Mathematics 50%, Physics 50%, and Entomology 50%.

Class of '00.[1] The women constitute 46.09% and the men 53.91% of the class, the numbers being 53 and 62 respectively.

The women are above their class percentage in German 81.82%, Romance Languages 100%, English 75%, Education 60%, History 50%, Botany 66⅔%, and Hygiene and Organic Training 100%.

The women are below their class percentage in Greek 0%, Latin 42.86%, Classical Philology 0%, Economics 11.76%, Mathematics 33⅓%, Physics 0%, Chemistry 0%, Physiology 28.57%, and Zoölogy 40%.

The men are above their class percentage in Greek 100%, Latin 57.14, Classical Philology 100%, Economics 88.24%, Mathematics 66⅔%, Physics 100%, Chemistry 100%, Physiology 71.43%, Zoölogy 60%.

The men are below their class percentage in German 18.18%, Romance Languages 0%, English 25%, Education 40%, History 50%, Botany 33⅓%, and Hygiene and Organic Training 0%.

Class of '01.[2] The women constitute 63.58%, and the men 36.42% of the class. the numbers being 96 and 55 respectively.

The women are above their class percentage in Latin

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[1] Psychology, Drawing and Painting are not represented. Ethics from this time on is merged with Philosophy. Entomology and Bionomics are both merged into Zoölogy. Hereafter they will not be carried separately, but in conjunction with the departments in which they are now classified. If they had been so classified throughout the study no important change in results would have occurred save that in the years 1898 and 1899 the women would have lost Entomology in which they were above their class percentage, and the men would have lost Bionomics in which they were above their class percentage; by adding these two departments to Zoölogy, the percentage in Zoölogy would be unchanged in '98 and the men largely predominant still in '99.

[2] Greek, Psychology, Drawing and Painting, and Hygiene and Organic Training are not represented.

88.66⅔%, German 100%, Romance Languages 100%, English 76.47%, History 68.75% and Botany 100%.

The women are below their class percentage in Classical Philology 50%, Education 50%, Economics and Sociology 0%, Mathematics 50%, Physics 0%, Chemistry 14.29%, Physiology 33⅓% and Zoölogy 25%.

The men are above their class percentage in Classical Philology 50%, Education 50%, Economics and Sociology 100%, Mathematics 50%, Physics 100%, Chemistry 85.71%, Physiology 66⅔%, Zoölogy 75%.

The men are below their class percentage in Latin 13.33⅓%, German 0%, Romance Languages 0%, English 23.53%, History 31.25%, and Botany 0%.

Totals for the Eight Years. The whole number of graduates in the departments mentioned was 894. Of these 416 or 46.53% were women, and 478 or 53.47% were men.

By reference to the accompanying table it will be seen that the women are above their percentage of the total number of

	Totals for '94,' 95, '96, 97.					Totals for whole period.				
	Total.	Men.	Per cent.	Women.	Per cent.	Total.	Men.	Per cent.	Women.	Per cent.
Greek,	9	8	88.88	1	11.12	16	13	81.25	3	18.75
Latin,	32	13	40.62	19	59.38	72	22	30.55	50	69.45
Classical Philology,*						9	6	66⅔	3	33⅓
German,	19	9	47.36	11	52.64	60	15	25	45	75
Romance Language,	5	1	20	4	80	22	2	9.09	20	90.91
English,	80	24	30	56	70	178	48	26.97	130	73.03
Psychology,	2	2	100	—	—	3	2	66⅔	1	33⅓
Ethics and Philos.,	3	2	66⅔	1	33⅓	4	3	75	1	25
Education,	23	12	52.17	11	47.83	52	26	50	26	50
History,	66	54	81.81	12	18.19	148	93	62.84	55	37.16
Economics & Sociol.,	35	32	91.42	3	8.58	74	69	93.24	5	6.76
Mathematics,	15	9	60	6	40	35	21	60	14	40
Astronomy,*	2	1	50	1	50	2	1	50	1	50
Physics,	6	5	83⅓	1	16⅔	11	9	81.82	2	18.18
Chemistry.	26	22	84.61	4	15.39	57	50	87.72	7	12.28
Botany,	10	4	40	6	60	22	10	45.45	12	56.55
Entomology,*	2	2	100	—	—	6	3	50	3	50
Zoölogy,	11	10	90.90	1	9.10	[24 [35	19 26	79.17 74.29	5 9	20.83][1] 25.81][2]
Bionomics,*						5	4	80	1	20
Physiology,	44	33	75	11	25	90	61	67.78	29	32.22
Hygiene and Organic Training,	1	1	100	—	—	2	1	50	1	50
Drawing & Painting,	2	—	—	2	100	2	—	—	2	100
Totals,	393	244	62.08	149	37.92	894	478	53.47	416	46.53

*Temporary Departments

[1] Zoölogy alone. [2] Zoölogy with Entomology and Bionomics.

graduates in Latin, German, Romance Languages, English, Education, Astronomy,[1] Botany, Entomology,[2] Drawing and Painting,[3] and Hygiene and Organic Training.[4]

That the women are below their percentage of the total number of graduates in Greek, Classical Philology, Psychology,[5] Ethics and Philosophy,[6] History, Economics and Sociology, Mathematics, Physics, Chemistry, Physiology and Histology, and Zoölogy (either including or excluding Entomology and Bionomics).

The men are above their percentage of the total number of graduates in Greek, Classical Philology, Psychology, Ethics and Philosophy, History, Economics and Sociology, Mathematics,[7] Physics, Chemistry, Physiology and Histology, and Zoölogy.

That the men are below their percentage of the total number of graduates in Latin, German, Romance Languages, English, Education, Astronomy, Botany, Entomology, Drawing and Painting, and Hygiene and Organic Training.

It will be seen that the women are not only above their percentage of the total number of graduates in all the language studies save Greek and Classical Philology, but they constitute from 69.45% to 90.91% of all the graduates of those departments. In Botany, and Drawing and Painting they have 56.55% and 100% respectively; in Education just 50%; in no other subject does the percentage of women nearly reach 50%.

It will also be seen that, whether taken by separate years, by four-year periods, or for the whole time in the total results, the women tend to choose the language studies (except Greek and Classical Philology), Education, Drawing and Painting, and Botany. Men tend to choose Greek, Classical Philology, Philosophy, History, Economics, Mathematics, and the physical and biological sciences (except Botany).[8]

It will be remembered that one of the purposes of this study was to see if this experiment in electives gave any data regarding the belief that men and women under existing conditions of society have different intellectual preferences where allowed freedom of choice. It is claimed that this study not only furnishes such data, but that it shows in a pronounced manner the direction of these tendencies.

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[1] There have been but two graduates, one man, one woman.

[2] There have been but six graduates, three men, three women.

[3] There have been but two graduates, both women.

[4] There have been but two graduates, one man, one woman.

[5] There have been but three graduates, two men, one woman.

[6] There have been but four graduates, three men, one woman.

[7] The percentage in mathematics is undoubtedly affected by the fact that many men students who do a great deal of work in mathematics have their majors in the engineering courses and hence mathematics is not credited with the men who really belong to it. History is similarly affected by majors in the law department.

[8] It might be added that a similar study for the four years from 1901 to 1905 showed little important change save that the women have gained in per cent. in Greek, History, Mathematics, and Physiology and Histology, and lost in Education. They even have a majority in some years in all these subjects and during all years since 1901 in History.

Another purpose of the study was to see what problems in practical education might be suggested when these results were applied to existing educational conditions. If the intellectual preferences of men and women are different will not those preferences be expressed, intentionally or unintentionally, in courses of study made or enforced by either sex alone? As the educational system now stands the sexes are not equally distributed numerically in the various branches of school work, and have not equal opportunity to influence the course of study. At present the great mass of teachers in the elementary schools are women, in the universities and higher schools they are chiefly men, while in the secondary schools there is greater equality in number though the women are still largely in the majority. In city schools men teachers are usually few in number as compared to women teachers, even principalships and superintendencies, formerly almost always filled by men, are now frequently held by women. This is what some call "femaleization of the schools." It is certainly true that the lower schools, which are those most vitally touching the great mass of the people, are chiefly under the influence of women; the higher schools chiefly under the influence of men.

These facts, in connection with the results of the above study, suggest several important questions which this paper will raise, but will not attempt to answer.

First, if women are to have complete domination over the public schools will the course of study in those schools come to be more and more in harmony with their intellectual likings and tendencies?

Second, if the first question is answered in the affirmative will the course of study come to be more suited to girls, and provide less amply for the peculiar and distinctive characteristics of boys?

Third, may such lack of proper provision for the boys account in part for the fact that boys tend to drop out of school at an earlier age than girls, and, if so, will it tend to increase under present tendencies?

Fourth, is the ideal educational environment, that which brings the child under the influence of men and women about equally, thus balancing the peculiar tendencies of the sexes?

Fifth, since many of the colleges and universities make Latin a prerequisite to entrance to all their important courses, and hence in order that their graduates may enter the college or university the high schools must make Latin an important part of their course of study, and since we have seen at Stanford Latin is pre-eminently a woman's study, does this in part account for the excess of girls in the high schools?

Sixth, a study of the figures given above for Stanford University will show the women to have been but 29.26% of the class of '94 and with slight variations to have increased from year to year, until in 1901 the women had 63.58% of the class (though the per cent. dropped nearly 10 points in '02), though the average for the eight years is but 46.53%; the women students of the University of California have increased in like proportion to those at Stanford University. Since the high schools are the principal preparatory schools for the universities are the present conditions of sex of teachers and character of course of study in part responsible for the very great increase in the number of women students at the universities?

As was said above, no attempt is here made to solve the questions asked, but it is believed that the paper furnishes some material for a discussion, and if it does furnish that material it will have fulfilled its purpose.

THE COLLEGE WOMAN'S CODE OF HONOR.

(A report prepared by the Child-Study Class of Wilson College in 1905.)

By Amy E. Tanner.

First of all we wish to express our thanks to the college instructors and students by whose aid this report has been made possible. The courtesy and promptness in the responses of the instructors to our letters of inquiry, and the carefulness of the students in answering the questions submitted to them, have put us under deep obligations.

The instructor also wishes especially to acknowledge her indebtedness to the class for the questions and the tables. Any suggestiveness or value that the questions have is due to the fact that they reflect problems which were actually confronting the students at the time and which an instructor usually finds difficulty in viewing from the same standpoint.

In order to get a set of questions which should appeal to the average college woman, each member of the class made out a set bearing upon moral situations with which she herself had been confronted. All the questions were then discussed by the class, and those were selected which bore upon the most common situations and to which the answer was the most doubtful.

The set, as finally issued, was as follows:

The College Code of Honor.

1. Age in years and months.

2. If the conductor neglected to take your fare, would you keep the money? Why?

3. Would you tell your teacher beforehand that your lesson was not prepared or run the risk of being called on? Why?

If partially prepared, would you bluff if called on? Why?

4.[1] Would you purposely avoid in class or in examination a girl whom you thought would cheat, in order not to have to report her? Why?

5. Would you exaggerate to add interest to conversation, or tell white lies to save people's feelings? Why?

6. Would you take another's plot in developing a supposedly original story? Why?

7. Is it wrong to tell a credulous girl harmless but outlandish and untrue stories? Why?

8. Is it honorable to use a pony, *i. e.*, an interlinear translation, in preparing a lesson? Why?

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[1] This question is to be omitted in the colleges where the honor system is not in operation.

9. If you accidentally saw on your neighbor's examination paper one point which would enable you to solve a whole problem, would you use it? Why?

10. Would you allow a person to have an ungrounded favorable opinion of you? Why?

11. Which is more honorable, to cheat openly or secretly? Why?

Returns were received from the following colleges and universities: Bryn Mawr, Vassar, Smith, Holyoke, Woman's College of Baltimore, Swarthmore, Oberlin, Northwestern, Chicago, Butler, Wisconsin and Wilson. The totals were, from Wilson, 114 papers, from all other women's colleges, 163; from coeducational institutions, 163, making a total of 440 papers. This gave us a basis for comparing the large women's colleges with a small one and the women's colleges with the coeducational institutions. The ages varied from 16 to 24 years, with most of them between 18 and 22 years.

Before taking up the returns a few statements as to the character of the questions will not be out of place. We would say first that we were not aiming to discover whether the average college woman is honest in the more common ways. We took it for granted that she does not steal nor does she often lie about important matters. What we attempted to find out was, rather, what she does in cases when a somewhat finer point of morality is involved, and especially when conflicting motives meet. We were trying to find what may be called the growing point of the moral sense, the point where there is considerable difference of opinion as to the right thing.

We would also forestall some possible objections as to the sincerity of the answers. In one or two cases when a request for assistance was made of another college, the instructor wrote that he feared that the returns would not be valuable, because the students would consider the questions too personal to be willing to answer them sincerely. But our experience in Wilson and the internal evidence of the papers from other colleges do not seem to justify this fear. The members of the class, students themselves and mingling with the other students constantly, are convinced that in the majority of cases the students answered the questions with care and sincerity. We feel sure that a few insincere answers crept in and a few careless ones, but so few that they do not invalidate the totals and are not more numerous than in any Child-Study investigation.

On the other hand, it is altogether probable that careless students and students who knew that their standards were lower than those of the average would not fill out the blanks, and so we should not be surprised if these answers gave a slightly higher standard than would be shown if honest answers could be obtained from every member of all the colleges concerned. But even if we grant this, the papers do not lose their value, because they show the trend of the college ideal and the dominating note of the college.

Finally, no one could read the papers for any length of time without becoming convinced of the undertone of earnestness and sincerity, the attempt to distinguish the idea of the right from the probable yielding to the wrong under temptation, in short, of the genuine endeavor to give a just valuation of the moral self.

In making out the questions we usually stated them in terms of what the student would do rather than in terms of what she thought right, hoping thus to get a record of facts rather than of theories. In making out the tables, we altered Question 7 to read "Is it right to tell a credulous girl harmless but outlandish and untrue stories?" We did this in order to make the answer parallel those of the other questions, since it thus brings the "right" and "wrong" answers into the same columns as they occupy in the other tables.

We also found that Question 11 should have been worded "less dishonorable" instead of "more honorable." Otherwise there was no difficulty in understanding the answers.

Let us now consider the returns themselves.

Question 2. If the conductor neglected to take your fare would you keep the money?

Of the total answers to this question 46% were affirmative, 51% negative and in 3% of the papers the question remained unanswered. The reasons given for affirmative answers were: conductor's business to collect fare, 17%; if returned might cause conductor's discharge, 10%; might embarrass conductor, 7%; need it more than company, 4%; too much trouble to find conductor, 4%; miscellaneous, 2%; no reason, 4%.

Reasons for negative answers were:—Dishonest, 24%; due to the company, 14%; would hurt conscience, 3%; wrong, 2%; miscellaneous, 2%; no reason, 1%.

About the same number would keep the money as would return it. Of those who would keep it, 17% would do so because it is the business of the conductor to collect and, presumably, not theirs to remind him of his duty. But 17% more would keep it because returning it would injure the conductor in some way. In this class, pity for the conductor takes precedence of the company's right to recompense. An impecunious few think that they need the money more than the company, and a few others, who have evidently been embittered by many experiences, say that it is one chance to get even for poor services or inability to get transfers.

Question 3 (a). If unprepared would you tell the teacher beforehand or run the risk of being called on?

The answers to this question fall into three classes.)1.)

Those who would run the risk, 50%; (2) those who would state beforehand that they were unprepared, 15%; and (3) conditional answers, 32%. 3% of the papers left the question unanswered.

Under the first class the reasons given were: for sake of the mark, 12%; hate to ask teacher, 8%; no question of honor, 5%; chances good, 5%; teacher's duty to find out, 4%; save making up lesson, 3%; foolish to tell, 2%; preparation not expected of all, 2%; miscellaneous, 4%; no reason, 5%.

Under the second class reasons given were: it would be honest, 5%; it would be a comfort, 4%; mark, 2%; better opinion of the professor, 2%; miscellaneous, 2%.

Those who would tell conditionally give the following limitations: depends on excuse, 11%; depends on teacher, 10%; depends on the subject, 3%; depends on amount of preparation, 2%; depends on the chance to escape, 1%; miscellaneous, 4%; unanswered, 3%.

Question 3 (b). If partially prepared, would you bluff if called on?

67% of the answers to this question were affirmative, 22% negative and 4% conditional. 6% left the question unanswered. Reasons given for the affirmative answers were: make effort and run chances of getting it right, 14%; to get credit, 10%; trains the reason, 10%; tests general knowledge, 4%; teacher is able to judge lesson, 4%; not dishonorable to recite one's own thought, 3%; make good impression, 3%; tests general knowledge and trains reason, 3%; shows cleverness, 1%; deserve credit for some work, 1%; miscellaneous, 6%; indefinite, 8%.

Negative reasons were: cannot bluff, 8%; dishonorable, 5%; wastes time, 2%; foolish, gains nothing, 1%; miscellaneous, 1%; indefinite, 5%.

Conditional reasons were: depends on how much I know, 2%; circumstances, 1%; miscellaneous, 1%; indefinite, 0%. unanswered, 6%.

One-half of these students would take their chances of being called on if they were unprepared, while 67% would "bluff" if partially prepared. In the first case, 31% would tell the instructor, if they had a good excuse, or if the instructor expected such explanations or was, shall we say, "easy?" Only 14% would tell under any conditions, and of that number only 5% would do so because it is honest. The rest wish to make sure of not failing in recitation, or to save themselves the worry of the suspense. Most of those who would not "bluff," confess frankly that they lack ability, not inclination.

Those who would take their chances of failing and "bluffing" seem, on the whole, to look upon the recitation as a contest of wits in which it is the teacher's business to find out the student's ignorance and the student's to conceal it. The student is justified in making a good show, and the instructor, presumably, in piercing below this show to the reality. It is not dishonorable, they say, to give one's own thoughts. It trains the reason to think out an original answer, it shows cleverness to make up an acceptable answer, and in all cases the student ought to get credit. Furthermore there is the idea that it is silly to tell, that it is making a fuss over nothing and being conscientious to the point of foolishness. There is also an element of excitement in the other that appeals to the adventurous mind.

Question 4. Would you purposely avoid in class or in examinations a girl whom you thought would cheat, in order not to have to report her?

64% of the total number answered this question in the affirmative and 32% in the negative. Unanswered, 4%.

Affirmative reasons were: dishonorable or hard, 29%; hurts the girl and gets her ill will, 13%; keeps self from chance of helping her, 5%; moral cowardice, 2%; miscellaneous, 11%; no reasons, 5%.

Negative reasons were: supports the honor system, 17%; right to report her, 7%; miscellaneous, 5%; no reasons, 3%.

This question needs some especial explanation. By the honor system is meant such a method of conducting recitations and examinations that the students are made responsible for preventing cheating. As conducted at Princeton and as introduced here, this is done through the medium of a Students' Committee, consisting of students from the different classes. All the students agree that if they see any cheating done they will report it to this committee, which then will examine into the case and, if necessary, recommend a penalty to the faculty. In conducting examinations, then, the instructor gives out the questions and leaves the class to itself.

When it was first proposed to introduce the system here, there was much discussion on whether the students would appreciate the necessity of reporting enough to do so if necessary. It was known that cheating had gone on somewhat in the past —nobody knew just how much—and it was felt that unless some students realized that the others would expose them in their wrong doing, they would only cheat more under the honor system than before. The point was therefore made repeatedly that it was a social obligation for a girl not only to refrain from cheating herself but to prevent others by all possible means and, if necessary, by reporting cheating.

The principal argument brought against such reporting was that it is contemptible to tell tales. The answer made to this repeatedly was that under Faculty government, when the reporter assumes more or less the profession of a spy, tattling deserves all the contempt that it gets, but that under a democracy, such as student government is, each member of the college must be responsible for preventing wrong doing, if the government itself is to stand. Of course the comparison was constantly made between this and the duty of a good citizen to prevent a crime.

The table shows the result of this discussion very plainly. Of the 114 Wilson students, 52% would not avoid the suspicious character, as against 16% of the 75 Bryn Mawr students and none from other institutions. We should say, at this point, that the honor system is not in operation in these institutions and the answers are scattering ones given by students who did not understand that the answer was not called for. They have proved interesting, however, as showing the different conceptions of the student's duty to others when he governs himself and when he is governed by others.

Of the Wilson students, then, 52% stood ready to support the honor system to the extent of reporting a girl if they saw her cheating. Most of the 47% who would evade their responsibility are still giving the old reason that it is contemptible to tell tales, even if it is the only way to prevent wrong doing.

Question 5 (a). Would you exaggerate to add interest to conversation?

To this question there were 50% affirmative answers, 42% negative and 8% of the papers left the question unanswered.

Reasons for affirmative answers were: causes amusement, 23%; tends to social comfort, 4%; natural to do so, 6%; justifiable, 1%; allowances always made, 2%; approved by rhetoric, 2%; miscellaneous, 4%; no reason, 8%.

Reasons given for negative answers were: leads to lying, 16%; unnecessary, 5%; truth always best, $\frac{3}{5}$%; miscellaneous, 4%; no reason, 16%.

Question 5 (b). Would you tell white lies to save people's feelings?

To this question there were 65% affirmative and 21% negative answers. Unanswered, 15%.

Affirmative reasons were: causes happiness, 21%; increases social comfort, 8%; sense of pity, 11%; harmless, 5%; natural, 3%; justifiable, 4%; duty, 5%; desire for popularity, 1%; miscellaneous, 6%.

Negative reasons were: tends to lying, 8%; unnecessary, 4%; truth always best, $\frac{7}{10}$%; a lie is a LIE, 3%; miscellaneous, 2%; no reason, 3%.

One of the interesting things about this question is the difference in the answers to the two parts of it. Whereas 42% would not intentionally exaggerate, only 21% would not tell white lies. That is, only one-half as many would try not to lie as would try not to exaggerate.

The difference is explained by the reasons given. The lie is excused because it leads to greater happiness while the exaggeration is condemned because it leads to lying pure and simple. When excused, the reason is much the same as for the white lie, that is, that it leads to greater social comfort in the way of amusement or happiness. The reason for telling the white lie is, almost without exception, a social one.

Some of the miscellaneous answers throw interesting side lights on the workings of the college woman's mind. Some say that the white lie is Christlike, that love is of more value than truth. Others assert that the truth should be treated in a broad minded way, or that there is a tacit social understanding that some deception is allowable. Others condone it on the ground that bluntness is stupid, while still others lament that they cannot lie without being discovered.

Altogether, it is interesting to know that 65% of the students with whom we deal are sufficiently solicitous of our feelings to tell us white lies, while 50% appreciate a good story enough to invent telling points as they narrate.

Question 6. Would you take another's plot in developing a supposedly original story?

11% of the answers were affirmative, 87% negative, and 3% left the question unanswered.

Those answering in the affirmative gave as reasons: there is no original plot though it may have original treatment, 9%; great writers do, 2%.

Reasons for negative were: It is dishonorable, 77%; prefer own plot, 7%; miscellaneous, 1%; no reason, 1%.

This question calls for little comment, as the answers are nearly all agreed. The interesting thing in it is the attempt of those who would use the plot to line themselves up with Shakespeare. To them a closer study of his characters and the way in which he used the material of others are recommended.

Question 7. Is it right to tell a credulous girl harmless but outlandish and untrue stories?

37% would and 53% would not do this, while 10% did not answer the question.

The reasons for telling such stories were: teaches the girl to be less credulous, 18%; not wrong if she is told afterward, 10%; not wrong if done merely for amusement, 3%; does no harm, ⅘%; miscellaneous, 3%; no reason, 1%.

Reasons against telling such stories were: dishonest, 25%;

makes girl ridiculous or hurts her, 5%; effect on credulous girl unfair to her, 5%; wrong principle to follow, 2%; amusing but wrong, ⅗%; teaches the girl falsity, ⅘%; makes her more credulous, 3%; harms her, 6%; miscellaneous, 3%; no reason, 3%.

The credulous girl does not fare so badly as we had thought that she would. Only 36% think it right to "jolly" her as against 52% who think it wrong. Even with this 36%, the real motive in half of the cases, that is with 18%, is solicitude for the girl. They are only trying to teach her to be less credulous and so better able to fight the world. They are almost as solicitous for her welfare as the girls who would not tell her stories, for of the latter class only 19% consider the effect on the girl, while 27% are thinking of their own soul's salvation. From this point of view, the girls who would "do" the credulous one appear as in truth self-sacrificing individuals who would run the risk of becoming dishonest in order to serve a fellow mortal. It sets them beside those who tell white lies to save people's feelings and exaggerate to contribute to the gayety of society.

Question 8. Is it honorable to use a pony, *i. e.*, an interlinear translation, in preparing a lesson?

21% of the students answering this question said yes, 48% no, and 28% gave a conditional answer. 3% did not answer.

The reasons given for the affirmative were: if used after preparation gives careful translation, 8%; saves time and work, 3%; gives run of story, 2%; harms no one but self, 1%; same as notes in book, 4%; miscellaneous, 1%; indefinite, 2%.

Reasons for negative answers: deception in some form, 15%; weakens one's ability, 12%; gets credit for work not done, 10%; unfair to rest of class, 8%; miscellaneous, 2%; no reason, 1%.

Conditional answers: depends on attitude of teacher, 20%; depends on way translation is used, 4%; depends on advancement of pupil, 2%; miscellaneous, 2%.

Only 48% condemn the use of a pony unconditionally, 28% would use it under certain conditions, and 20% justify its use generally. Most of those who condemn it do so because it involves some sort of deception or unfairness, while only 12% realize the weakening effect upon the student. Most of the conditional answers vary with the attitude of the instructor, thus implying again that the harm in the use lies in its dishonesty or unfairness.

Question 9. If you accidentally saw on your neighbor's examination paper one point which would enable you to solve a whole problem would you use it?

There were 25% who answered this question in the affirmative, 56% in the negative and 14% gave indefinite answers. Unanswered 5%. Reasons for affirmative answer: would have thought of point later, 9%; not truly ignorant, 6%; fear failure, or low mark, 4%; seen unintentionally and no dishonesty involved, 1%; would use it and tell instructor of the predicament, 2%; could not resist temptation, 1%; miscellaneous, $\frac{8}{5}$%.

Reasons for negative answer: dishonest, 30%; dishonorable, 16%; hurt conscience, 3%; respect for honor system, 1%; resistance strengthens self, 1%; no possibility of seeing a point accidentally, 1%; miscellaneous, 3%; no reason, 3%.

Indefinite answers: would probably use it, 3%; would probably not use it, 2%; would avoid seeing the paper, 2%; never in such a position, 2%; uncertain, 1%; miscellaneous, 2%; no reason, 1%.

One-fourth of the students confess frankly that they would use a point seen accidentally, and 14% give indefinite answers. The reasons given are especially interesting, because they involve some psychological subtleties. Out of this 25%, 14% consider themselves really entitled to the point either because it is not fair that they should get zero on the question when they know most of it, or because they are sure that they would have thought of it later, or because they had once known it and are failing only in memory, not in application or in reasoning power.

Some admit frankly that they are afraid of failure or cannot resist temptation, but on the whole those who would use the point seem to be somewhat given over to questions of casuistry.

The great majority of those who condemn the point, on the other hand, do it simply on the ground that it is dishonest, without going into any subtleties of analysis.

It would be interesting to know how many of the answers to this question refer to actual experiences. In the cases that have come under observation, the temptation has usually been too strong.

Question 10. Would you allow a person to have an ungrounded favorable opinion of you?

Of the answers to this question, 54% were affirmative, 33% negative and 12% conditional. Only 1% left the question unanswered.

Reasons for affirmative answer: it is an incentive, 13%; vanity, 9%; not responsible, 7%; difficulty in explaining, 5%; truth will out later, 4%; balance the unfavorable opinions, 2%; not harmful, 3%; miscellaneous, 4%; no reason, 7%.

Reasons for negative answer: deception, 11%; truth will be discovered and a still worse opinion formed, 6%; desire to be known as true self, 4%; would feel uncomfortable, 5%; miscellaneous, 2%; no reason, 6%.

Reasons for conditional answer: depends on the person, 3%; depends on the importance of the opinion, 3%; uncertain, 3%; miscellaneous, 11%.

The fact that 54% would not remove an ungrounded favorable opinion, as against 33% who would, shows once more the essentially social nature of the college woman. The good opinion would serve as an ideal to strive for, for 12%, and would gratify the vanity of 9% while it would make 5% uncomfortable, who yet could not remove it without creating a most embarrassing position.

The miscellaneous opinions here bring out all kinds of views. Some think that this opinion would only balance other unfavorable opinions; others hint that they are never sure what the opinion really is; still others, that their judgment of themselves ought not to be preferred to that of others, that those others have a right to their own opinions, or that it is unkind to enlighten them!

Deception is the leading reason for not allowing the opinion to remain, while fear of discovery and a consequent worse opinion comes second. One student is so ingenious as to observe that if you maintain that you are not worthy of so high an opinion, the person will form a still higher one!

Question 11. Which is more honorable, to cheat openly or secretly?

In replying to this question 67% considered it more honorable to cheat openly, 5% to cheat secretly and 27% considered either form equally bad. There were $\frac{4}{5}\%$ ambiguous answers and $\frac{3}{5}\%$ left the question unanswered.

Reasons for preference for open cheating: less deceitful, 37%; less dishonest not to attempt concealment, 13%; risk of punishment, 6%; braver, 2%; miscellaneous, 2%; no reason, 5%.

Reasons for preference for secret cheating: does not set bad example, 1%; less bravado, 1%; less deceitful, 1%; miscellaneous, $\frac{1}{10}\%$.

Open and secret cheating are considered equally bad by 27% of the students, and open cheating more honorable than secret by 67%. By far most of the reasons assigned for this view are that it is less deceitful. The girl runs the risk of punishment then and is braver than if she cheats secretly.

Those who prefer secret cheating do so because it does not set a bad example or shows less boldness, but they are in a hopeless minority, amounting in all to only 5%.

This point of view is interesting to the instructor, as he is likely to be especially irritated by the open cheater, whereas the moral sense of his students would not condemn her as much as it would the secret one. Perhaps this explains to some extent why a girl who seems to have a somewhat obtuse moral sense is sometimes popular even with girls who do not approve her acts. They know that she does wrong, but, since she makes no secret of her sins, they think that she gets even more condemnation than is due her.

COMPARATIVE TABLE OF TOTALS.

Question	AFFIRMATIVE.			NEGATIVE.			CONDITIONAL.		
	Wilson	Other Women's Col'ges	Co-educational	Wilson	Other Women's Col'ges	Co-educational	Wilson	Other Women's Col'ges	Co-educational
No. 2	34%	53%	48%	60%	43%	52%			
* 3A	64"	54"	34"	11"	13"	16"	23%	23%	42%
3B	71"	72"	59"	18"	18"	30"		6"	2"
4	47"	72"	95"	53"	16"	5"			
5A	60"	53"	42"	35"	35"	51"			
5B	68"	70"	56"	16"	14"	30"			
6	6"	6"	18"	94"	91"	77"			
7	25"	40"	41"	56"	59"	45"			
8	31"	21"	13"	54"	44"	46"	10"	32"	37"
9	22"	18"	33"	53"	70"	44"	16"	8"	18"
10	62"	58"	45"	26"	30"	41"	14"	9"	14"
† 11	2"	⅘"	0	66"	10"	68"	29"	29"	19"

Actual numbers on which the table is based: Wilson College, 114 replies; other Women's Colleges, 163 replies; Co-educational Institutions, 163 replies.

* The affirmative answers indicate those who would run the risk; negative, those who would tell.

† The affirmative answers indicate those who would cheat secretly; negative, openly; conditional, equal condemnation.

Let us now compare the coeducational colleges with the women's, and the larger women's colleges with the smaller.

There are practically no differences between the larger women's colleges and the smaller one except in Questions 2, 4 and 7. In these cases the standard of the small college is higher. In Question 2, the difference is possibly due to the fact that, as there is but one short car line here, the Wilson students have been left with more tender consciences than those from the other colleges, most of which are situated in or near places of some size. The class, however, has little confidence in this inference. The differences in Questions 4 and 7 are probably due to the fact that previous to the answering of these questions, the subjects had been rather fully discussed throughout the college. Probably on this account all of the returns are somewhat higher in their standard than they would have been if collected four months earlier.

In comparing the coeducational with the women's colleges, we find some noticeable differences. Contrary to the general opinion, a much larger per cent. of women in the women's colleges would run the risk of being called on if unprepared than would in the coeducational institutions, and a noticeably larger per cent. would "bluff."

Questions 5 and 10 should also be grouped with Question 3, as much the same state of mind seems to be involved in all cases. The girl who would run the risk of being called on, who would "bluff" if called on, and who would rest upon an unearned reputation, would probably be the girl who would enjoy exaggerating and who would hardly be troubled by a white lie. At least the per cents for all these points are curiously alike in the women's colleges and are considerably larger than those from the coeducational institutions. In the matter of using a "pony" the women's colleges are also less sensitive than the coeducational, while the reverse is the case in regard to using a point accidentally seen.

There are but two things which are almost universally condemned by all the colleges, that is, using another's plot and cheating secretly.

In the matter of keeping the carfare, using the "pony," using the point accidentally seen and deceiving the credulous girl, unqualified condemnation comes from about 50% of all the colleges, with considerable numbers doubtful as to what they would do under varying conditions.

The things which are the least condemned are "bluffing" in its two forms of exaggerating and telling white lies, and accepting an unduly favorable opinion. In all these cases the social purpose of the deception and the feeling that the person deceived is more or less at fault for believing everything that he hears, play a large factor in the justification.

In conclusion, then, from the comparative table the college girl appears to be a person with a thoroughgoing contempt for sneaking and out and out lying but with sufficient intelligence and sense of humor in most cases to enjoy any sort of contest with wits even though she risks her scholarly reputation thereby.

Socially she is, on the whole, warm hearted enough to sacrifice the truth in small matters to the demands of friendship and courtesy, but rarely has she sufficient social sense to undertake the punishment of a wrong doer. She has not yet, except in a few cases, come to believe that the social demand and the demand for truth can both be satisfied as a rule by the exercise of her wits, that is by the cultivation of tact.

Contrary to a somewhat widespread impression, she has few moral finickings. Like the rest of mankind, she is likely to use any available means to attain a much desired end.

Still, even in the cases where she is below the average in her standards, the frank, almost naïve admissions and the reasons given for the views, seem to indicate that these girls, at least, are more undeveloped than bad or were trained in surroundings where success was accounted the right.

To the college instructor the investigation is very suggestive. It would seem that there is practically no danger of deliberate cheating if he leaves the class during an examination, with the understanding that the students are upon their honor, but it is rather dismaying to learn that 20% of all the students are likely to use "ponies" under any conditions, and that 25% would use a point seen accidentally.

It is difficult if not impossible to get rid of the use of the "pony" except by raising the whole moral tone of the college, but the temptation to use the point accidentally seen is more easily handled. Students will usually adopt the suggestion to put a seat between them and their neighbors, and the experience here has been that the students do it without suggestion. If there are not seats enough to allow this, the instructor can usually warn the students beforehand of the psychological subtleties that they will fall into if they do see a point accidentally. College girls are quite open to this sort of appeal because they have imagination enough to appreciate the possible situations.

On the other hand, alas for the unwary instructor who assumes that the average girl believes that she is prepared because she attempts to recite! He is, as the girls say, "easy." His lessons will be the first ones to be neglected when a stress of work comes, his references will be the most hastily read, his articles or themes will never be in on time, because he never allows for the element of humor, exaggeration or bluff in the excuses presented.

But he must also avoid the extreme of considering the college girl as a deep dyed villain because she occasionally wriggles the truth somewhat violently in her attempt to get the better of a difficult situation. Truth, to be sure, is not by nature sinuous, but neither is social morality rigid, and only an appreciation of the latter fact, combined with a sense of humor and at least a rudimentary ability to read human nature, will save the situation for the instructor. A college girl will do her best to persuade the instructor that she does not deserve a penalty (which she knows she does deserve), both because she does not want the penalty, and because she would like to feel that she can out-argue the instructor. But when she has exhausted her resources, she will accept the penalty without one particle of rancor, if only she feels that the instructor has enjoyed the argument and that he believes in her essential honor.

The point that is by far the most significant in its wider bearings is the question of the college girl's conception of her social duties. We have seen that the thing that is least condemned is deception for the sake of some one else, while the thing that is hardest for a girl to do is to undertake the reporting of a wrong doer. Is not this directly traceable to the fact that most children are trained to obedience to an outside authority, instead of to self control? Are not our schools, and even our homes, monarchies, more or less absolute, in nearly all cases? How can we fairly expect young people who have always obeyed others, and have looked upon it as the duty of those others to see that law and order prevail, to feel any sense of responsibility for social law and order when they go out into the world? Democracy in the state is doomed to failure unless teachers train for it by establishing democracy in the schools. As long as the teacher lays down the law and assumes the responsibility of enforcing it upon the pupils, the pupils will band together in a more or less explicit defence against the teacher. As long as they are habituated to this condition, so long will they take the same attitude towards the law and its enforcement, and side with the politician who enables them to evade specific laws which are against their narrow interests. A democratic government must prevail in the home and in the school if it is finally to succeed in the state.

So, to return to our data again, perhaps the most important thing for our colleges to do is to take up more explicitly than they have the question of the college students' social responsibilities. As a sub-division of this is the question of how to arouse a feeling among the students that, after all, the one who exaggerates or tells fibs is more stupid than clever, because it always requires more wit to make the truth interesting or kind than to invent a pure fiction. The growing point of the college woman's moral sense seems to lie beyond the question of mere deception, in the conflict between her sense of honesty and her sense of kindness or pity. Surely it is the place of the college to train her mind sufficiently so that she can reconcile the requirement of honesty with the law of love.

A SKETCH OF A BEGINNER'S COURSE IN PSYCHOLOGY.[1]

By Edmund C. Sanford.

In planning a course in Psychology one may look at the subject matter and ask himself, "How may I present this science in the most logical and self-consistent manner?" Or he may look at his class and ask himself, "What sort of psychological knowledge are these young men or young women most likely to find useful, immediately or remotely, in the actual affairs of life?" The course developed will differ immensely as one question or the other is asked; and perhaps I cannot indicate better what is to follow than by saying that I have asked myself the second of these questions rather than the first.

What sort of psychological knowledge, then, is the average beginner in the subject going to find most useful, immediately or remotely, in the actual affairs of life? The average beginner in psychology is *not* going to become a psychologist by profession; he takes the course merely as a part of a scheme of liberal education. He *is*, on the contrary, very likely to become a teacher, still more likely to have a hand in the begetting and the bringing up of children, and is certain to need to deal rationally with a greater or less number of his fellow men. It is knowledge that will assist in these directions, therefore, that he will find the most helpful.

Somebody has defined psychology (with a touch of cynicism) as the science of what everybody knew beforehand, anyway. Now if every man is more or less of a practical psychologist we shall not go far wrong if we take as one of our aims to complete, and clarify, and put a rational foundation under, such current psychological knowledge as is found among the people at large.

I have often thought that a study of current popular psychology would be a very interesting one. I know that one would find many curious things—as, for example, the "spiritualists" with such material conceptions of the soul as to make it 'break away from the body with a series of snapping sounds;' and physicians who refuse to believe in a soul at all because they can find no suitable cavity for it in the brain. One would certainly find in the words used many fragments of past psychological terminologies—the system of innate ideas, of faculties, of phrenological bumps—and perhaps most curious of all (and singularly persistent, too,) the conception of the soul as a little manikin within the head that gazes upon and manipulates the images of things brought in by the senses—a genuine begging of the whole psychological question by supposing another mental life exactly like that which is to be explained—an inner self as richly endowed as the more peripheral psychological self that is to be accounted for. But all this is of course superficial and quite different from the real psychological lore upon which men and women, in all relations of life, base their conduct toward one another. We are all practical psychologists in a much more effective way than this. And we have to be; a reasonably good knowledge of practical psychology is of survival value in the biological sense, and those creatures that cannot acquire it pay the penalty. Unlimited quantities of this sort of psychological lore are crystallized in proverbs, maxims and fables the world over; in habits, customs, ceremonies, myths, religious observances, etc., etc., while problems considerably more complicated and more consciously treated constitute the major portion of the most effective parts of poetry and prose literature. Indeed, whatever any man knows of the habits and tendencies of behavior of his fellowmen is just this psychological lore and nothing else.

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[1] Read at the Cambridge meeting of the American Psychological Association, Dec. 28, 1905, and earlier in slightly different form at Clark University and the University of Indiana.

And it is none the worse for being practical. Solomon probably entertained no definite position on the question of parallelism *vs.* interaction, but his remark about sparing the rod and spoiling the child is based upon a perfectly correct presupposition with regard to the essential psychophysic unity of the body and the mind. Julius Cæsar, when he remarked that men easily believe that which they wish to believe, was not so far behind our modern conclusion that fundamental beliefs are emotional and not rational in their origin. Whoever gave form to the myth of Cupid and Psyche was no mean psychologist. The story is familiar. Cupid and Psyche were married upon the condition that she should never see his face. All went well until her curiosity became overmastering and she stole a look at him while he slept. In her agitation at discovering who it really was to whom she had been married, she spilled a drop of hot oil upon him from her lamp, or woke him in some other way, and he departed never to return. Whoever formulated that myth was in no need to be told that it is fatal to attempt to become cognitively conscious of one's emotions.

These pieces of psychological lore have been picked up by observation and experience, and most people still get them from experience chiefly—or from tradition or intuition illuminated by experience—and our question then becomes: Can we by a properly arranged course of study facilitate the attainment of this same end? And if we can, how far can we expect to go, and in what way shall we go to work? I believe we can do so, to a certain extent at least. Many things of the greatest importance cannot be learned without actual experience of them, but that experience can be shortened, The way in which I think we might go about it is the programme that I shall presently sketch out for you.

But let us first ask: What in particular ought we to get from such a course? The most valuable result of such a course, after a first-hand acquaintance with a mass of psychological facts, I believe to be a well practiced facility in assuming what I may call the *physician's attitude* both toward one's self and toward those with whom one has to deal. I call it the "physician's attitude" because it is easy to understand that the physician, just so far as he is a physician, is acccustomed to put off the personal relation (whether it be his friend or his enemy that he is called upon to treat) and look at each person as a case, as an organism whose behavior is definitely determined by fixed laws—in whose body cause and effect follow in inevitable sequence. The asylum physician feels no resentment when one of his patients pours out imprecations upon him, charges him with unnamable crimes, and assaults him besides. He simply sees in the patient one whose cerebral mechanism is out of joint, and whose energy, therefore, discharges itself in irregular ways.

The fact is that we are prone, most of us, to be too anthropomorphic, not only in our philosophical and theological speculations but also in our dealings with our fellow men. We project our conscious selves into them, assuming that whatever they do is done with full consciousness and willful intention, and forgetting that there is a vast underworld of unconscious cause and effect that in large measure determines action in accordance with itself. The physician, the psychologist, the teacher, the man of the world—any one in fact, who has to do with his fellow men, should reach a stage where he can instantly slip back and forth, as occasion demands, between the attitude in which the man before him is a man and a brother, and that in which he is a "case"—a human mechanism— another example of the curious interrelations of natural law. All these should be able at once to depersonalize both themselves and the man, woman, or child before them in order to act toward them with insight and intelligence. This physician's attitude should be, I believe, the crown of a properly constructed course in psychology—infinitely more valuable than any amount of psychological theory or nice definitions of psychological processes. It will be reached, I believe, by a constant exhibition of the presence of uniformities and natural laws in psychical matters, first in easily accessible phenomena, and later in those which are less usual and more mystifying—or, to come to the matter in the concrete, I would start a class of beginners, with:

1. The Psychology of Acquisition—of learning in all its phases, so far as I could get at it; memory, habit, skill, practice in muscular matters, and in intellectual matters (and incidentally fatigue, attention, emotion, interest, volition), treating each aspect of learning for itself, and treating theoretical aspects only in so far as they would be necessary to correlate the facts, to make clear the empirical rules for economic learning at which we might arrive. I should expect to make the whole as concrete as possible at every stage, and to illustrate and enforce it at every possible point by appropriate demonstrations and experiments. I should expect that the student would not know very many definitions nor very many cut and dried principles; but on the other hand I should not expect him to feel, as is sometimes the case, that psychical phenomena are things not to be found outside the covers of a book, and that certainly never took place in his own consciousness. I should begin here because it is a topic in which each student has an immediate practical interest. He is in the midst of a long course of learning and feels a natural interest in anything that has a genuine bearing on that question; and because the fund of definite psychological information is here tolerably great. I should make the whole as much a matter of mental hygiene and as directly applicable to the daily learning of the pupils as I knew how.

2. Next after that I should take up the Psychology of Truth and Error—in perception, in comprehension, in belief—illusions, prejudices, superstitions, delusions; the psychology of Bacon's idols, the psychology of reasoning and of logical pitfalls; mob psychology and great popular delusions; national prejudices and misconceptions; the psychology of testimony. Upon several aspects of these matters there is already a considerable literature.

3. The Nature and Laws of Emotion, beginning first with the æsthetic emotions—what we think is beautiful and what is ugly, and why we think so—the relation of custom and the unaccustomed to pleasure and displeasure. After this I should go on to the stronger biological emotions, fear, anger and love—their nature, genesis and hygiene. What biological purposes they serve, how they have been modified and refined by

the growth of civilization. How to love and to hate wisely and adequately, so far as one may learn to do so; how to fear those things that should be feared and to despise those that should be despised.

4. I would take up then the Psychological Aspect of Conduct and Character, the psychological basis of ethics. Types of character and temperaments: the criminal and pauper—the mystic and philistine—the natural leader and the naturally led, changes in personality and character, in health and disease, volition and voluntary movements, the formation and influence of ideals, weakness and strength of will; hygiene and diseases of will.

5. My fifth section would deal with the facts of the Interdependence of Mind and Body. (a) What is fixed in human character and make-up, and what can be changed. Heredity, transmitted and acquired characteristics. Instincts, their nature and evolution. And because instincts are embodied in the nervous structures or growth tendencies of the nervous system, I should (b) take that up in outline, physiologically as well as anatomically, and along with it the sense organs and elementary sensations. (c) Hypnotism would come in here also. (d) Outline study of the chief forms of nervous diseases, especially those showing psychical effects—epilepsy and hysteria. (e) Outline study of the chief forms of mental disease. (f) Prophylaxy, means of guarding against diseases of the nervous system and mind. Rest and fatigue.

6. Psychogenesis. The General Biological View of Mind. Its purpose and development in the animal series. Psychogenesis in the child, with particular attention to the stages of development and the degree and manner in which mental growth and development may properly be assisted.

7. Systematization of the Psychological Facts brought out in the preceding sections. Systematic psychology. This might, perhaps, be best managed as a review of the definitions and laws to be found in some small text book. I should expect that the students would know much more already than is to be found within the covers of any small book; that they could pass over it rapidly and would get from it merely a systematization of what they already know.

All the earlier part of the course it would be necessary to give in lectures or assigned readings, or to bring out in discussions. There is, so far as I know, no book that brings together these matters in anything like this order and grouping.

Now what can be said in defence of such a programme? Does it not exactly reverse the usual order of procedure, which gives the theory first and goes on to give the applications later?

And have I not mixed up the subject a good deal, treating several aspects of the same mental phenomenon in several places and taking up topics that imply a knowledge of attention or will or emotion or heredity, before I have taken up these topics themselves? To all of these questions I must reply very emphatically: Yes. I have done precisely that thing; I have done it consciously, and I believe I can justify myself.

Let me reply to the last charge first, that is, as to the order of presentation. I am convinced that there is really no natural and essential order in the presentation of the subject of psychology. In the first place the mind is one; all its various forms of activity are nearly always involved, directly or indirectly, in every mental phenomenon. You cannot treat any one fully without dragging in all the rest. And, in the second place, every young man or woman who reaches the age at which he begins to study psychology already knows enough of what the common psychological terms stand for, to be amply able to understand (with a moderate amount of parenthetical explanation) such a discussion as is here intended of any psychological topic taken up. We are therefore justified in arranging the order of topics according to any other considerations that may seem important, and an indication of such an order may be found in the general standpoint and mental condition of the students who are likely to undertake such a course. It is for this purpose that I have placed large and obviously practical topics at the very beginning.

And why should we not be ready to begin with the practical side of things in any subject that has a practical and definitely useful side, and to go for a long time with only enough theory to keep us out of absolute confusion? I believe that we are in danger of superstition here. We feel that a subject cannot be good educationally unless it is presented in formal manner, and we forthwith conclude that that manner of approach which is most abstractly perfect and calls most obviously for strenuous application is the best possible. As a matter of fact we often teach nothing but a book, or a system, or a skeleton because we do not offer the student any flesh to put on the dry bones that we give him, or we leave him by slow degrees to pick up and apply such flesh as he can.

This I believe to be all wrong. It is true, no doubt, that we do not get to *science* till we do get to this very abstract and desiccated essence. But we must not try to get it short of the processes that naturally lead up to it. The genuine scientific standpoint is something that is not to be reached quickly by every beginner in a subject, and the genuine scientific interest is not to be felt at once by every one who may enter upon a course in a science. It is something that must grow and be cultivated; it is something esoteric. A class that had passed through such a course as I have sketched would, I believe, be ready to begin with the science, be ready, that is, to attack questions of psychological theory. They would have gathered some feeling for the uniformities that run through the phenomena of the mental world; would be free from some of the popular superstitions about the things of the mind; and a few of them would, perhaps, have laid the foundations of an interest in the real science of mind strong enough to carry them on to the prosecution of studies whose practical bearings all terminate in the advancement of pure psychological theory.

AN EXPERIMENT WITH PUGILISM.

By **David S. Hill**, Fellow in Clark University.

The art of boxing slowly developed from the leaden cestus of the ancients, to the bare-knuckle stage, and then to the present period of soft, padded gloves. No one will question the degraded condition of pugilism to-day. Yet the fortunes made by pugilists, the thousands who flock to see them, and the extensive space devoted to them in the newspapers, show its wide popularity with men. Pugilism has been killed and resuscitated a hundred times, but it will not down. With the current attempt to save and reform football the question arises what is inherently evil in the manly sports, pugilism included? Is it worth rescuing or shall it be left in possession of those who call the human nose "a claret jug," the mouth, "a kisser," and the eyes, "daylights" or "peepers?"

The status of football calls out many explanations of its degradation. The various college presidents have spoken, the autocratic "committee" has spoken, the President of the United States has been interviewed, and all agree only in that football has degenerated. President Pritchett, one of the latest to speak, says the great weakness in American college life is the separation between the intellectual and social life. There should be more real companionship between student and professors instead of the intimacy between student and trainer or professional coach. Says he: "In some way in our college and in all American colleges, a social life must be developed which shall be the joint life of student and teacher. The absence of such a fellowship upon simple, democratic and natural lines is the weakest point of the American institutions."

Herein we have an explanation of the evils in athletics that goes deeper than an enumeration of the obvious accidental roughness, occasional brutality, demoralization, extravagance and graft. Sports are developed by youths under the personal influence of professional athletes and without real comradeship of cultured men. The result is, sports are perverted. It is a question, therefore, how much there is inherent in athletics that tends towards the abuses so common, and whether these abuses arise out of the lower element actually in control of many sports. Sprinting, a most natural exercise, has become the vehicle of the lowest sharper. Wrestling is in bad odor, even amongst professionals, because of the habitual selling of matches. Baseball is to-day mostly a business where players are sold in the leagues as horses are traded. College football is sufficiently advertised as an evil. Boxing, in some respects the most popular and natural sport, is in the quagmire of professionalism. The writer has attended championship wrestling matches, sprinting, races, baseball games, and a prize fight; if the tough faces and characters seen in control of the events he has witnessed are representative, the theory that degradation of a sport depends upon those who actually make and control it, is here verified. The principle applies to professional and brutal contests that are promoted in the guise of "amateur" sport. This kind of debasement, especially of boxing, is often practiced as an evasion of the law that prohibits prize fights, and it brings undue censure upon an enjoyable athletic exercise which involves keen activity of body and of mind.

Recently the writer was invited to witness some amateur boxing bouts at one of the largest and richest amateur athletic clubs in America. The bouts supposedly were participated in by members only. Several of the sparrers were recognized as those participating previously in similar bouts in a less pretentious gymnasium where prize fights are held. They had been recruited a few days before by the swell athletic club and, it was stated, were contending for medals only. It was afterwards ascertained that the medals were exchangeable for money. Upon inquiry it was found that the men actually promoting these so-called amateur bouts in this exclusive club were the sporting editor of a sensational newspaper, a notorious man about town, and a professional trainer. This incident is typical of the corruption of a sport by its managers.

Viciousness is not the inherent tendency of football or baseball, or sprinting, or wrestling, or boxing. These afford natural bent for the play instinct, and may be used to develop and stimulate bodies otherwise atrophying under modern civilization, as well as to afford diversion to fagged minds. In the present din of protest aroused by football we may err in discarding modes of exercise that are essential to our race. We do not have to hunt, fight animals and men, cut timber, walk and run like our ancestors, consequently brain centers may decay because of lack of use. Powers of body unexercised because of rapid transit and telegraph and specialization, will atrophy unless we find a substitute for the natural activities abandoned with the growth of civilization. The adolescent period especially demands abundance of animal activity. It would be worth while to establish the fact that athletics, that even pugilism, is not inherently bad and that it is practical to utilize and control it to effective service. Food, drink, the good things of life, and religion, may be ill used, whereas it is the abuse of good things that brings evil.

In his "Ethics of Boxing and Manly Sport," John Boyle O'Reilly points out that prize fighting is not the aim of boxing: "The boxer in action has not a loose muscle or a sleepy brain cell. His mind is quicker and more watchful than a chess-player's. He has to gather his impulses and hurl them, straight and purposeful with every movement and motion. . . . He has to overcome the keen and precise cunning of an excited brain that is watching him with eyes as bright as a hawk's. The boxer must take as well as give. It is only the bully and the coward who want to *give* all the time, and escape *taking*. . . . The inestimable value of boxing as a training discipline for the development of boys and young men remains. There is no emulation or controversy so hot, so vital, so deliciously interesting as the boxer's."

The writer does not subscribe wholly to the enthusiasm of Mr. O'Reilly's account of boxing, nevertheless he believes boxing may be made useful as an educative factor. To make a practical test of the matter the experiment described in the following pages was performed in a secondary school.

The school in question was a large one devoted to the preparation of boys for college. It was patronized largely by sons of wealthy parents, and many of these boys were difficult propositions for the teacher. Here interscholastic athletics were carefully nurtured, with many evil results. Some of the students passed directly from the school to professional baseball. Inducements of popularity and concessions attracted certain athletic but intellectually idle boys. During the football season the pervading belief in the all-importance of "winning the championship" characterized the team candidates, and the weaker youths were assiduously drilled "to support the team" with yells and songs. The football season ended in the late fall with a collapse of interest and with dissipation in numerous cases.

The experimenter found himself in charge of a department of this school, helpless to control the general policy, but with a hundred boys in his classes. Repeatedly, after Thanksgiving Day, two facts were impressed upon him—first, the lack of a bond of interest and association between pupil and teacher; secondly, the demoralization of interscholastic football. At the same time the lack of constant physical training and exercise for the average student was apparent.

One day the teacher stood before the boys and said: "Boys, I wish to perform an experiment in athletics and I want you to help me. Because I shall have no assistants I will ask for only twenty members—to join a class in sparring. Each boy who joins must bring written permission from his parents. We are not to learn prize fighting or slugging, but how to spar. Each boy who joins must buy his own gloves of the kind I approve. Because of the disorder and brutality that often attends boxing, I propose to submit the class to a new system of control. You must consent for me to be absolute autocrat of this class and any boy who violates the rule will be expelled. I am not a very good boxer but I have taken lessons and will promise to teach you some valuable things if you will help me. There is a difference between boxing for sport, exercise with gentlemen in a decent manner, and prize fighting,—just as much difference as there is between playing cards at home and gambling in a low dive.'' The writer then traced the history of boxing, emphasizing the brutality of the exercise wherever abandoned to the professionals and gamblers. He therefore endeavored to make very plain to the boys the necessity of observing the conditions to be enumerated. There were more applicants than the teacher could accommodate. He selected various types, varying from the tough, lazy youth to the sensitive, undersized boy.

The class was conducted in a large hall and no visitors or on-lookers were admitted. The presence of on-lookers can easily spoil a sparring lesson. Each boy was weighed and those of approximately equal weight and strength were paired, and given a station about the room, so that within a radius of twenty feet from the instructor, in the center, were ten couples.

The following simple but rigid rules were formulated and agreed upon:

A. No one shall strike a blow until the bell strikes *one.*

B. All sparring must instantly cease at *two* strokes of bell.

C. Attention must be centered on instructor during intervals.

D. Gloves must be put into boxes immediately at *three* strokes of bell.

Each boy was numbered from one to twenty. Each couple of boys represented an odd and an even number (1-2) (3-4) (5-6). The boys always boxed in light attire to give freedom of movement and to prevent overheating.

They were instructed in the danger of rapid cooling of the body, and the necessity of a ''rub down'' after exercise was emphasized.

The instructor selected the largest boy for his partner, and stood in the centre of the room. With all at attention, with the large, padded gloves donned, he carefully explained positions of hands, feet, and body; then with a stroke of the bell he put all to practicing these positions. Two strokes of the bell brought all again to attention.

I.

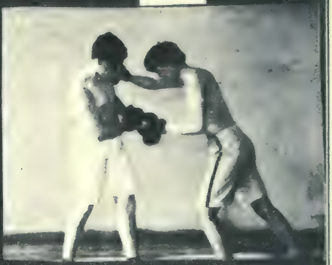
II.

III.

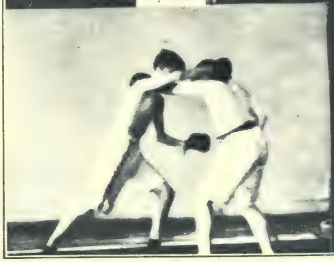
IV.

V.

VI.



VII.



VIII.

He showed them how to strike a straight blow with the left hand and correspondingly how the opposing man should either guard with right, or step back into position. (See figures II–III.) All the boys representing odd numbers were told at first to be on the offensive only, the boys representing even numbers to be on the defensive (guarding or stepping back). The signal, *one*, was given and after a few minutes, the signal, *two*. The even numbers were then told to act offensively and the odd defensively, in the same manner. No other blows or movements were allowed during the first lesson. During subsequent lessons other blows were shown and practiced with the corresponding defensive attitudes or movements. No general sparring was allowed until after the sixth lesson, when some proficiency had been attained, when the last two minutes were devoted always to a bout in which the boys were told to utilize all they had learned.

By that time the pupils had developed the ability of defense, and agility with hands and feet, so that the sparring was both interesting and fast, as well as harmless. Some twenty lessons were given in the course, which was continued for two seasons. At each meeting the lesson for the day was outlined as follows, on the board, and demonstrated by the instructor, who in no sense is an expert athlete. A possible advantage in the system here explained is that it can be utilized after only moderate experience by almost any male teacher. Following are six of the lessons. Notice that on the left are given the movements of offense, and on the right, the corresponding movements of defence. (See figures I-VIII.) Every boy in the class practiced each movement in turn and finally utilized all at will, in the short bouts, controlled by the signal bells, and limited to the rounds of two minutes each. The photographs are actual snap shots of the members of the class taken at the time.

FIRST EIGHT LESSONS.

Offense.	*Defense.*
1. Position.	
2. Straight lead with left.	2. Step back, in position.
3 Straight lead with left.	3. Guard with right and counter with left.
4. Swing with left.	4. Guard with right and counter on body with left.
5. Swing with right.	5. Guard with left and counter with right.
6. Feint with left and lead right to jaw.	6. Guard with right and left.
7. Lead with left.	7. Move head to left and cross-counter with right.
8. Lead with left.	8. Side-step, and cross-counter with right.

The experiment was conducted after the football season during the winters of two years. The boys varied in age from fourteen to nineteen years and in weight from eighty-five to one hundred and sixty pounds. Anthropometric measurements were not taken. The qualitative results observed may be interesting and suggestive of what might be done with a more or less tabooed sport.

Of ill results noted, there were: one case of nose-bleed, one knock-down, and one serious cold was contracted. On the other hand, the boys learned the elements of the sport and acquired some skill, in the comparatively few lessons given, namely, two periods in each week, during after-school hours, for ten weeks of each year. A most valuable result was the establishment of a new bond of fellowship and respect between teacher and pupils. There was little boisterous disorder or slugging, which were inhibited by the simple rules enforced. The boys showed surprising eagerness to join the class. This was manifested by the weak and strong alike.

Psychologists are revealing the destroying effects of fear upon the sympathetic nervous mechanism, especially in youth. The tendency to dissipate all fear was clearly observed. One or two timid and rather feeble boys developed obvious self-confidence and strength. Muscular development in shoulders and arms, and neck was evident, and there was increase of agility and grace of movement. Co-ordination of eye and arm and the ability to use two arms at once were improved. One or two boys inclined to be "bullyish" were tamed by judiciously chosen partners. A wholesome respect and acknowledgment of what the other fellow could do was engendered, together with a consciousness of the power of self-defence. Opportunity was given to the instructor to explain the importance of sleep, proper food, regular habits, and exercise. The primitive, combative instincts were built upon legitimately to achieve a worthy educational end.

The regular athletic trainer expressed surprise that boxing could be controlled where such a large number were participating. Before the course ended there were many eager candidates from other classes. Uniformly the ultimate effect on class work was excellent, some of the boys showing remarkable improvement under the stimulus of new contact with and friendship for the teacher. One case in particular may be noted. *S.* at the beginning of the year was a most unpromising pupil. Older than his classmates, conditioned in several of his studies and threatened with expulsion for insolence, he nurtured a dislike for teacher and school. The boys called him "Wild Bill." In six months "Wild Bill" became the main stay of discipline in our department, removed all of his conditions, and was promoted in June, a happy youth. He is now in business. A letter to his old teacher received two weeks ago speaks of the physical benefit he derived from the boxing class, of how his mind at school, formerly dull and weary, began "to feel like working" and above all of the confidence in himself there aroused and nurtured. Another one writes: "The club was a success; it was always conducted in an orderly manner, the boys were gentlemanly and appreciated your efforts. Many boys first realized the importance of the art of self-defence and profited accordingly. What we learned benefited us greatly." Another writes: "It is no exaggeration to state that the experience was beneficial to my mental, moral and physical growth. Nothing but good can come from a well planned and properly controlled boxing class."

We do not offer boxing as an entire substitute for football. It has its valuable function, as have tennis, fencing, baseball or swimming. But this experiment, conducted under disadvantageous conditions, demonstrates that the prime cause of evil in athletics can be eliminated. Any athletic game utilizing primitive tendencies and exercising body and mind, when under proper control, is a valuable factor in modern life.

LITERATURE.

La vita dei bambini. PAOLA LOMBROSO. Fratelli Bocca, Editori, Torino, 1904. pp. 208.

This book, by the daughter of the Italian criminologist, is the result of the author's observations and experiments on several hundred children belonging to different grades of society and seeks to unify under one principle, that of self conservation, all the varied manifestations of child life. Chapter I deals with the general topic of the manifestations of this instinct of conservation in children, their tenacity of life and resistance to both psychic and physical pain. The affective life of children and its apparent contradictions are explained by considering all its manifestations as purely utilitarian and egocentric. Children love those who are useful to them, either by direct ministration to their wants or by furnishing to them the sense of care and protection which is necessary to their sense of well being. The child's natural tendency is toward this sense of well being and enjoyment and he instinctively shuns everything which detracts from it. His jealousy is no proof of the existence of affection for the person of whom he is jealous but merely an egoistic demand that he shall be the recipient of all the care and attention given by that person. His natural tendency is toward enjoyment and the play instinct helps him to transform even the commonplace into a source of pleasure.

The subject of Chapter II is the development of language. The author's point of view may be summarized in the statement that in the whole process of the acquisition of language, the child simply follows the line of least resistance and strictly obeys the law of parsimony. He always uses the form of expression which costs the least effort and accepts the explanation which is most in accord with his own experience and so most easily grasped. For the same reason he enjoys repetition and dislikes any change in the accustomed order of his little world.

Chapter III traces the evolution of the child's comprehension of words. A series of words, graded in difficulty, was experimentally tested upon one hundred children of the extremely poor, between six and twelve years, and the definitions carefully analyzed. The same list was also submitted to fifty children from cultured families. It was found that all the words passed through definite stages of development. In the first stage, the content of the word was negative, *i. e.*, the child did not recognize it. In the second stage, the word is interpreted in an arbitrary and erroneous way, the most frequent errors being those of assonance, the confusion of the given word with one resembling it in sound. In a third stage the content of the word is partly approximate,—partly correct and partly erroneous. In the last stage the true content of the word is attained. The poor children were far behind those from cultured families, the ratio being about two to one, *i. e.*, the children from cultured families interpreted the content of the words about twice as quickly and twice as accurately as the poor children.

The subject of Chapter IV is "why children love stories," and the author finds the answer, not in the richness of fantasy in children, but rather in their lack of it. In the natural world the child is surrounded by phenomena which he does not understand, and the marvels of the fairy story seem quite natural to him. He always wants a reason for things, but that reason is most satisfactory to him which he can grasp most easily and fit in with the knowledge which he already possesses. He is instinctively anthropomorphic, and as he is unacquainted with the subtle distinctions between the animal, mineral and vegetable kingdoms, the difference is, for him, practically nonexistent and, like the savage, he is ready to accept life like his own as the explanation of all movement. From the pedagogical point of view, the author regards the story as the natural food of the child's mind and necessary for his normal mental growth.

Chapter V discusses the drawings of children and is illustrated with reproductions of actual drawings. The conclusion at which the author arrives is that the drawings of children are not so much a reproduction of what the child sees as attempts to illustrate the dramatic fantasy of the child's mind.

Chapter VI is a study of the psychology of very poor children. Here the instinct of self conservation, stripped of all the graces and conventions which mark it in children more fortunately situated, is revealed in all its intensity. All their faculties and energies are concentrated on the filling of their hungry little stomachs. Their affections have a frankly utilitarian basis; their ideas of happiness are centered upon eating, so that even the hospital, where perhaps painful operations have been undergone, is regarded as a place of delight because "they have good things to eat there." The crushing yoke of poverty and suffering has left its imprint upon these children and has made them often servile and obsequious and concentrated all their energies and ingenuity upon means of getting the necessities of life. Yet among them are found examples of pride, delicacy and fineness of feeling and an independence which, refusing to be crushed by circumstances, the author considers an indication of a much greater force of character than the same thing in the children of well to do families. Most of them take a philosophic view of the hardships of their lives and accept them as a matter of course without complaint. In mental development they are inferior to the children of the well to do classes; they have less power of concentration and continuity of attention and are less malleable; language is far less developed and consequently they lack power of expression, but in all matters pertaining to practical living they are precocious.

While the author's application of the law of self conservation seems pushed to an extreme hardly compatible with the facts, since in spite of its undoubted truth in many instances, we nevertheless do find instances of self sacrifice and unselfishness among comparatively young children, it does unquestionably call attention to a fundamental truth.

The application of the law of parsimony to the learning of language is most suggestive and explains many but not all of the facts. American children, certainly, do not accept explanations with the readiness and mental laziness ascribed to them by Madame Lombroso. As a whole, the book is an interesting, suggestive, and valuable contribution to the literature of child study. THEODATE L. SMITH.

Native Language and Native Education, by REV. H. A. JUNOD. Journal of the African Society, No. XVII, Oct., 1905. The Macmillan Co., New York. pp. 115.

H. A. Junod, of the Transvaal Swiss Mission, presents a remarkably sensible and able paper on the place of the native language in native education. The usual method takes the child right from the kraal and teaches him English—the language, grammar, history, a little Shakespeare, etc., assuming that what is good for the whites is also good for the blacks. This is the only mission method which receives government aid. The second and far better method considers the child as a little Bantu having already learned the language in which the mind of his forefathers has been incorporated. The vernacular is kept as the principal medium of education. The readers contain chosen pieces of his own folklore, history of his tribe, descriptions of the natural features of his own country. New ideas of arithmetic, geography and sacred history are explained in his own tongue. Later he begins to learn English as a new tongue with a phrase-book which he must translate into his vernacular. The words are names of common articles of the house and market, things he will have to know in his relations to the whites. Later he is taught a little science. English terms are introduced, where necessary, into his own tongue. English is therefore a higher course and should not supplant the vernacular. It will be a better medium of instruction in a stage which only a few natives will ever reach. The vernacular at the base and English at the top, therefore, is the new method. These children will never want book English, and development for the children is a falsetto thing save through the mother tongue. These aborigines can easily be impressed with English, but their minds cannot move freely in it and there is always an immense loss of meaning between teacher and pupil. They ought to be able even to parse their own language. The old method hinders real development, puts the fabric of life and character on a false basis, tends to conceit and unreality. Their receptive verbal memories, natural to primitive people, enable them to make a fair show of knowledge on a very slender basis and to rest content with words, imitation, half digested notions which will soon be lost. The external way of learning ends in cram. Only by the mother tongue can slumbering powers be awakened and interest aroused, and the child really come to use its brain and be trained in the true sense. The results of the old education do not show any real command of English and in spite of their training the natives take no interest in anything except their cattle. The old education, too, separates the younger generation from their own people and makes them drift to towns and lose all knowledge of their traditions. Let the natives, then, remain faithful to their own mentality. The American negroes have been violently severed from all their surroundings and this makes an anomalous condition which should be a lesson to the English colonies. Connections with the past must be kept as strong as possible. The Bantus should retain their old feudal system and discuss their own affairs in their mother tongue and be men rather than caricatures of white people. This would produce less dissatisfaction. Missionaries preach with better effect in the native tongue. Neither they nor their language will ever disappear. Even in civilized countries patois survives together with an official and literary language. We must not cut them off from their stock of inherited ideas, from an indefinable traditional atmosphere which means so much. The present code is cleverly devised to stamp out the native spirit, ideals and aspiration. To the objection that there are so many native languages that they cannot be taken into account, the answer is that this complication is far less than it seems. There are but three main native languages in all South Africa—Zulu, Suto and Thonga—each with its dialects. Each government would have to deal at least with but two dialects. To be sure, missionaries and teachers will have to go more fully into the study of these languages, but this would be a gain both for science and in winning the confidence of the natives. In

Junod's scheme English is not begun until the fourth school year and some vernacular lessons are kept up to the end of the course. To this end more native text-books are needed; also more grammar and a little scientific encyclopedia, conversation books, and so on. The first duty, however, is to organize thoroughly elementary education in the vernacular. An ideal book is still Colenso's Medley, which is a kind of scientific encyclopedia.

Muzeum czasopismo Towarzystwa Nauczycieli Szkôl Wyzczych. Edited by Dr. Boleslaw Mankowski. Vol. XXI, No. 10, 1905.

This periodical is published by a society of teachers in the high schools in Poland and is already in its twenty-first year. It contains a very curious and interesting article describing the boycott which native Polanders have attempted to enforce upon the Russian schools. First there was apathy of parents; then came a revolt in school children which was maintained. Last February they were finally joined by their parents who assembled with Sienkiewicz at their head and sent a petition, signed by thirty thousand parents, asking for Polish schools. On October 3d, 1905, the minister granted permission to teach in private schools all subjects in Polish, and excluding Russian language, history and geography. The writer of this article considers this as a first step to be followed by similar action against the Russian public schools, which he declares to be "equally barbarous."

Le Langage. Essai sur la psychologie normale et pathologique de cette fonction. Par EUGENE-BERNARD LEROY. Félix Alcan, Paris, 1905. pp. 293.

The author here discusses signs and the different forms of language —tactile, auditive, visual, writing, etc.; then passes to the animal perception of language signs; then to the recognition of differences in written and spoken speech. After discussing briefly the receptive side he passes to what he terms the emission of language, discussing the conditions of speech and writing. In the last part he takes up verbal hallucination, treating auditive and kinæsthetic representation, internal articulation, and reading. False verbal perceptions of the various kinds above discussed are treated in a single chapter. Another is devoted to verbal hallucinations which are due directly to internal speech. This he connects with delirium of persecution. The first three parts of the book are a general summary of what is pretty well known by all psychologists concerning the receptive and the motor side of speech. The writer deals in generalities and only attempts a summary and general treatment. The distinctive feature of the work is his theory or rather presupposition that hallucinations in which words play a rôle have some important connection with the psychology of speech, if not, indeed, with its genesis. Most of this part is descriptive. The candid and informed reader cannot say, and, indeed, the author perhaps would hardly claim to have made any new contributions to the subject he treats except some interesting clinical cases, and even the best of these are quoted from the literature of insanity and often from the older literature. At the end of the work he gives some dozen pages of literature but even this is not brought down to date and deals largely with earlier works. The title suggests far more than the book contributes and it is indeed singular to find a work published in 1905 that so ignores the voluminous and extremely interesting work recently done bearing upon the theme treated.

A Few Thoughts on Education, by SIR GOOROO DASS BANERJEE. Thacker, Spink & Co., Calcutta, 1904. pp. 326.

The writer is very modest and claims only to present certain aspects of education, but he really discusses the entire educational problem of India, which presents many peculiar difficulties. The Indian students have to acquire their knowledge through ihe medium of English. There are many creeds. Yet the indigenous language and literature must also be cultivated. In view of all these problems the author undertakes to describe the ideal requirements of education from infancy through the professional school. The range of knowledge here indicated is remarkable and his suggestions, especially those concerning moral, religious and legal education, are interesting and unique. He shows a great familiarity with the state of educational discussion in Europe, and rare sagacity in solving the problem of the mixed races and Mohammedans, Hindus, the claims of the ancient classics, etc.

State Normal School Systems of the United States, by the Department of Education. University, Eugene, Oregon. University of Oregon Bulletin, Nov., 1905, pp. 43.

In this interesting pamphlet the author has given us a historic sketch of the Normal School System in this country. He also collected answers from a large number of experts, of principals, and superintendents, to two questions. First, is a large central Normal School preferable to a number of Normal Schools? Why? Second, if the State supports a number of Normal Schools, should they be controlled by one separate Board or by separate local boards, or by a combination of the two? It was striking to observe how points differ, and how often it coincides with the number in different localities. If definite conclusions were wanted, the results of this inquiry were interesting, but if general light on many phases of the subject is desirable, this paper is of very high value. This, of course, is far better than definite results.

Saddest of all showings, perhaps, was the question as to the per cent. of Normal trained teachers. Many evaded this question, most thought it increasing. We wished the writer had collected statistics as to college graduation in the faculties of Normal Schools.

Rational Living. Some Practical Inferences from Modern Psychology, by HENRY CHURCHILL KING. The Macmillan Co., New York, 1905. pp. 271.

President King has certainly a genius for putting psychological conclusions to work. He sees, as some psychologists do not, the relation between this department and life. He realizes its complexity and the paradoxes of the mental, moral and even physical life. He respects the lessons of science, believes in the unity of man and is not muddled, as most specialists are, by the relations between the mind and the body, recognizing fully that each has great influence upon the other. He draws well the lessons of the doctrine of the unity of the mind for correct living. Central in importance is the will. Every experience normally terminates in action. This makes a correct and fundamental self-control imperative. Inhibition of will is often the highest moral act. We rarely have a more wholesome doctrine than that here set forth for young men.

The International Correspondence School System of Instruction by Mail and the Results Achieved. International Correspondence Schools, Scranton, Pa., 1905. pp. 1009.

The movement here described may be truly called marvellous. Within thirteen years the records of 650,000 students have been examined and the records of 55,000 have been copied. The latter are about 12.7 per cent. of the number of students who had paid for their scholarship at the time their names were taken off. 96 per cent. of all begin with arithmetic, of which they have little or no knowledge. Most have but limited time at their disposal, although unlimited time is allowed to complete the course. There are very many technical students. The volume is almost entirely made up of lists of students for each of the many hundreds of grades and topics.

Alaska. Harriman Expedition. Vol. I. Narrative, Glaciers, Natives. Vol. II. History of Geographical Resources. Vol. III. Glaciers and Glaciation.

These sumptuous volumes are summary statements and are to be supplemented by purpose and design. Our space permits no account of these volumes, and it must suffice to say that they will long be an encyclopedia for knowledge pertaining to Alaska. Even this note should not omit the admirable illustrations, many of them colored, and photographs which greatly enhance the value of these volumes.

Sprachpsychologie und Sprachunterricht, von FRIEDRICH BAUMANN. Max Niemeyer, Halle, 1905. pp. 142.

After a careful study of the opinions of Sallwürk, Gansman and Eggert, this author concludes that each of these, his chief predecessors in the pedagogy of modern languages, lays too little stress upon written speech. He criticises Wundt for heresy here. Indeed psychology cannot give any answer. We must always keep in view in teaching the end to be attained, and while the Berlitz school may give superficial and speedy results, its methods never should be used in the Realschule or Gymnasia, because they do not give inner understanding of the language, and, like all modern methods, lay too much stress upon oral work. There is a higher function of speech which only grammar can bring out. The acoustic type of linguists is always inferior. Written speech is the generator and the most important support of higher culture.

The Point of View of Modern Education, by HARRIET A. MARSH. Public School Publishing Co., Bloomington, Ill., 1905. pp. 148.

Miss Marsh has had a long and very successful experience not only as a teacher, but with Mothers' Clubs. She is an inaugurator of several departures in bringing the family and the school together, which have spread far and wide. In this little volume she attempts to state concisely her own educational creed, a part of which is frankly based on voluntary concepts of the body and the soul. The special topics are the growth of the affection; the three nerve centres; the child and his teachers; what the child should learn; influence.

The book does not attempt the novelty or systematic teaching, but will be very valuable in the hands of the practical teachers. A list of readings which can be found in most of the libraries is appended.

School Funds and their Apportionment. A Consideration of the Subject with Reference to a More General Equalization of both the Burdens and the Advantages of Education, by ELLWOOD P. CUBBERLEY. Teachers College, Columbia Univ., New York, Oct., 1905. pp. 254.

The writer first discusses changes in population and education, and selects Massachusetts as an illustration of existing inequalities. He then discusses the school census as a basis, then enrollment and average membership as bases of the proportion of funds, then daily attendance. Equalizing the advantages of secondary education, State subsidies, etc., has done much harm, so that the apportionment in three-fourths of the States of the Union needs careful revision.

Uber Verbrechen und Strafen, von CESARE BECCARIA. Translated by Karl Esselborn.

This valuable work, just translated from the Italian, is devoted to the exposition of a principle which may be briefly summarized as follows. It is a principle which is very different from that which has animated most modern legislation. It is that in order that punishment be not an act of force of one or many against a single citizen, it must always be public, must follow the crime very quickly and necessarily, yet be as mild as the circumstances permit, must fit the crime and be definitely prescribed by law.

A Primer of Essentials in Grammar and Rhetoric for Secondary Schools, by MARIETTA KNIGHT. American Book Co., New York, 1905. pp. 64.

Miss Knight has had a long and successful experience, and in this little handbook, attempts to bring back some of the essentials of the old discarded grammar. She thinks her booklet will serve as a guide for teachers of rhetoric, and aid them to dispose of the ordinary textbooks.

Annual Report of the Board of Regents of the Smithsonian Institution. Showing the Operations, Expenditures and Conditions of the Institution for Year Ending June 30, 1903. Government Printing Office, Washington, 1905. pp. 646.

This interesting volume constitutes a somewhat new departure. After the usual summary of the operations of the year and the report of the curator, etc., the main body of the volume is devoted to the description of the United States National Museum, by Rathbun, and a study of the museums of New York City, Albany, Buffalo, and Chicago, with notes on European Institutions, by A. B. Meyer. There are no less than one hundred and twenty full page illustrations of buildings occupied by National Collections. There are many museums in libraries of which the volume contains many pictures.

Admirable as the work is, it ought to be supplemented by at least one other volume which would be necessary to give an account of more important American Museums.

Are College Entrance Requirements too Great in Quantity? by WILSON FARRAND. The Schoolmaster's Association of New York and Vicinity. Nov. 11, 1901. pp. 16.

The writer shows that entrance requirements have increased and become a great field demanding relief, and makes three propositions. First, to call a halt on the increase which has been going on for so many years; secondly, let the colleges cut off some of the recent additions of individual subjects. The third more radical proposition, which the author thinks may be more feasible with the colleges, urges to lower the preparation to from either fifteen to eighteen points. The author apparently is not aware that Clark College has even gone beyond his own extreme, and abolished entrance examinations altogether.

Journal of Proceedings and Addresses of the Forty-Fourth Annual Meeting of the National Education Association held at Asbury Park and Ocean Grove, N. J., July 3-7, 1905. Published by the Association, Secretary's Office, Winona, Minn. pp. 968.

This is perhaps on the whole the most valuable volume of proceedings that the N. E. A. has ever published. The meeting at Asbury Park was very numerously attended. The outside attractions were great but were by no means as distracting as those the year before at

St. Louis, so that the attendance at the meetings was better. The number of sections into which the association is now broken up, the vast number of papers read, the difficulty of finding suitable auditoriums, is very great, and the trouble in finding one's way about, and often the great distances that have to be covered by the large number who run about from section to section following the attractive speakers, increase greatly the distraction and fatigue. This might be minimized by miniature maps placed in the hands of every member on registration, if not on arrival, which would indicate very clearly the place of meeting of each section for each day and hour. Every one interested in the progress of education as a science will welcome the attempt seen in some of the papers more and more from year to year, and especially in the three supplementary pamphlets on salaries, tenure and pensions, on industrial education in rural schools, and on taxation, to present the results of very carefully prepared studies made both by individuals and committees. It would perhaps be invidious to name individual papers that are contributions of more than transient character, but the number of these is certainly increasing. To our thinking, one of the greatest defects was the extraordinary length of the programme of the mass meeting. The president's address was excellent, its quality even surprising his friends, but its length was inexcusable considering the very valuable papers that were to follow, some of which, like, for instance, Mr. Skiff's, were given to a very small audience. It ought to be safe to assume without a rule to that effect that the president will not use his position to occupy an inordinate amount of time. It is, of course, entirely impossible to review these scores of papers or even to name the best. The council, the meetings of which used to be one of the most interesting, has become one of the dullest. The report on progress of the year was excellent but far too long. The comparison of modern business methods with those of education, shed little light upon either topic. The report on simplification of spelling should have been far more concise and to our thinking the memorial addresses, of which there were five, should be printed and not read. But it would require an essay to discuss the many points suggested by even a brief review of this very many-sided volume.

The Great Schoolmen of the Middle Ages. An account of their lives, and the services they rendered to the church and the world. By W. J. TOWNSEND. Hodder & Stoughton, London, 2d Ed. pp. 361.

Townsend here gives us a work which meets a long-felt need. It is a picturesque story of the Renaissance and the great schoolmen, beginning with Scotus Erigena. The most important writers treated are Gerbert, Anselm, Abélard, Hugo, Peter the Lombard, Avicenna, Averroes, Albertus Magnus, Alexander of Hales, Bonaventura, Aquinas, Duns Scotus, William of Occam, Gerson, with final chapters on the objections to their work and the rationale of scholasticism.

The Heroes of Defeat, by WILLIAM JACKSON ARMSTRONG. Robert Clark Co., Cincinnati, 1905. pp. 599.

This book was received only ten days ago and to-day, despite a very busy life, I have turned the last page. It is a work of a unique kind. The author has studied and travelled extensively and has presented here six sketches of great men, representing great causes, who were overwhelmed by defeat. They are Schamyl, the soldier priest and hero of the Caucasus; Abdul-Kader, the Sultan of Algeria; Scanderbeg, a soldier of Jesus Christ, Prince of Albania; Tecumseh, the Ohioan hero of the forest; Vercingetorix, King of Gaul; and Kosciuszko, the hero of Poland. Each sketch requires study in a very different historical field and yet each is presented with great vigor, with ample learning and with enthusiasm. It is remarkable that in such very different fields the presentation should be on so high a level. Some of his heroes will seem to the reader greater than others. As a whole, this volume ought to be not only a welcome addition to every historical library, but it has an ethical lift and glow about it that give it a high pedagogic quality. It ought to have a wide circulation. If it does not, the fault will be in the public and not in the author.

Allegemeine Pädagogik in Leitsätzen zu akademischen Vorlesungen, von PAUL NATORP. N. G. Elwert, Marburg, 1905. pp. 77.

This book, by a well known Marburg professor of philosophy, may be cited as an exquisite illustration of the method of treating pedagogy by a German philosopher. First comes an elaborate *Grundlegung* which tells us how far pedagogy is a science and not merely an art. The problem of education is stated; so is that of the *Begriff*. The principle according to which the ideal of culture is developed is enunciated and philosophy is declared the basis of pedagogy. The function of logic, ethics, æsthetics and psychology are concisely stated. The content of culture as a system, its divisions, the field of the intellect, the basal law of its stages of development, the world of will and its laws, that of art, the idea of religious culture, social pedagogy of a culture society, the basal functions of social life, the kinds of social activity: these constitute the first part or the bases of pedagogy, and comprise nearly half the pamphlet. The second part is entitled "Description of the Culture Curriculum." Under the first period of childhood, he discusses the formation of the world of perception, the elements of logical processes in the formation of ideas, language and the beginning of ideas, play and work, culture in the folk school, number and form, speech and writing, real branches, the higher studies, their problem, mathematics and science, the mother tongue, classical languages, living modern languages, sociology, history, development of the will, ethics, school organization as a factor in the building of the will, religion, philosophy and education of teachers. Most of these topics are discussed in less than a page and in terms so abstract and general as to be, to our thinking, very remote from any possible service of any kind. Desiccated definitions, abstract formulæ, which apparently have never been filled with any red blood of meaning for the author, but which are written to put his own meagre mental furniture into some kind of order, seem to be the whole. We have not read the book through, but we have spent a good part of an evening in reading, with all possible attention, many of these sections, and without one scintilla of profit. If this is German pedagogy, let it remain German. If it is philosophy, let us keep philosophy as remote as it here is from any vital contact with school work.

War Inconsistent with the Religion of Jesus Christ, by DAVID LOWE DODGE. With an Introduction by Edwin D. Mead. Ginn & Co., Boston, 1905. pp. 192.

War is inconsistent with the religion of Jesus because it is inhuman, hardens the heart, oppresses the poor, spreads terror and distress, brings fatigue, famine, and destroys youth, multiplies widows and orphans. It is also unwise because instead of preventing it provokes insult and mischief, increases difficulty, destroys property, endangers liberty and happiness, injures the morals of society, hazards eternal things; and finally it is criminal for it is running into temptation, inflames mind, injures conscience, is not doing to others as we wish them to do to us, is inconsistent with mercy, is not manifesting our love to enemies, but is rendering evil for evil. It is opposed to the example of the Son of God. The author's distinction is that he was an American who founded the first peace society in the world, and this book, first prepared for the press in 1812, is a pioneer work in this field. The author was born in 1774 in Pomfret, Connecticut.

Right and Wrong Thinking and Their Results, by AARON MARTIN CRANE. Lothrop, Lee & Shepard Co., Boston, 1905. pp. 361.

Mr. Crane's sub-title for his book is "The Undreamed-of Possibilities which Man may achieve through his own Mental Control." Perfection is the ultimate goal of man's best and highest aspiration, and it is a great mistake to assume that it is not within our reach. Exalted as the ideal is, it is based on the nature of man, illustrated in the teaching of Jesus. We simply have to apply to ourselves the best of everything we know. If we would do all that we knew, control thinking so as to avoid discordant thoughts, keep the body at the top of its condition, always make moral distinctions, drop the habit of worry and have the benefits of early training, maintain ourselves in a sympathetic state, with a sense of responsibility, practice perfect control, all would follow as a matter of course.

Selections from the Septuagint, by FREDERICK CORNWALLIS CONYBEARE and ST. GEORGE STOCK. Ginn & Co., Boston, 1905. pp. 313.

This is a somewhat bold step on the part of, in some respects, our best American educational publisher. The editors, instead of regarding the Septuagint as an aid to the study of Hebrew, have reversed the procedure, assuming that Greek translation of the Old Testament has occasionally preserved traces of readings superior to those of the Masoretic text which was constituted centuries later. Another unique feature of this work is the grammar of the Septuagint in some seventy-five pages. The text is the story of Joseph which, "whatever else it may be, is one of the best novels ever written," and which bears comparison with the plot of a play of Terence or Plautus. The writers deplore that criticism has laid its hand on a story so beautiful from the point of view of literature. No better illustration could be chosen of the service rendered by modern criticism to the intelligent study of the Bible. The second is the story of the Exodus; then comes that of Balaam and Balak; then that of Samson; then David and Goliath; and lastly Elijah, Hezekiah and Sennacherib.

The State and the Teacher, by SAMUEL AYERS. Principal of Public School, No. 32, New York City, 1905.

These interesting articles urge the duty of the State to provide retirement pay for the teachers, Teacher's Mutual Benefit Associations, Public School Teacher's Retirement Funds. It is an interesting and able presentation of the subjects to which it pertains.

Evolution: Racial and Habitual, by JOHN T. GULICK. Carnegie Institution of Washington, 1905. pp. 269.

Rev. John T. Gulick, in the valuable and new inferences which he has drawn from the sharp differentiation of snail species in different Hawaiian valleys, draws as one of his interesting conclusions the following law: That in species well adjusted to the environment, the typical—that is, the average—form of the species is not only the best adapted, but the most fertile. This is a very conservative principle which tends to prevent rapid transformation. So of intellectual variations. Individuals of moderate capacity are more prolific, though less successful in other respects than the intellectual.

Encyklopädisches Handbuch des Blindenwesens, von ALEXANDER MELL. A. Pichlers Witwe & Sohn, Wien, 1900. pp. 890.

This almost monumental volume, with eighty-one portraits of eminent blind people or of their teachers, one hundred and thirty-five other cuts, with its tables and charts, is probably the best summary of knowledge about the status of this type of defective that we have. The print is fine, in double columns, the topics minutely divided and alphabetically arranged. The author's view is broad enough to take in American as well as German and other European publications.

Die wissenschaftlichen Grundlagen des ersten Rechenunterrichts, von ALOIS LANNER. Carl Fromme, Wien, 1905. pp. 49.

This is an interesting and quite analytic study of the processes involved in elementary number study. Great stress is laid upon counting, and adding and dividing are treated most fully. The author has evidently never heard of the Dewey or the Speare method, and there is nothing here that bears upon these views or processes.

The Fifth Year Book of the National Society for the Scientific Study of Education. Part I. On the Teaching of English in Elementtary and High Schools, by GEORGE P. BROWN. Edited by Manfred J. Holmes. Bloomington, Ill., 1906. pp. 94.

This society has upon its roster the names of many of the very best representatives of the teaching profession of the United States. The present publication is a rather detailed plan of how English ought to be taught to be made most effective. It is an eminently sensible, practical report that adds little new to our knowledge.

Indian Names of Places in Worcester County, Massachusetts. With interpretations of some of them. By LINCOLN N. KINNICUTT, Worcester, Mass., 1905. pp. 59.

This is a work interesting to all who care for Indian matters, but of special interest to residents of Worcester County, Massachusetts, where perhaps a hundred names of places, here explained and described, are found.

Much Ado About Nothing, by WM. SHAKESPEARE, with notes by Robert Williamson, pp. 126. The Winter's Tale, by Wm. Shakespeare, with notes by T. George Wright, pp. 140. (The Swan Edition.*)* Longmans, Green & Co., New York, 1905.

These are sample copies of eleven little volumes, each edited and illustrated by various teachers of English, Thirteen in all are to be published. Each is preceded by a brief introduction containing what the pupil most needs to know, and followed by notes, brief and very concise, most of them little more than glossaries. There are then some dozen questions on each act. Each is illustrated by a number of full-page cuts. On the whole, it can safely be said that we have nothing else quite as convenient or judicious.

Shakespeare's King Henry the Fifth, edited by George C. D. Odell, 1905, pp. 146. Shakespeare's Twelfth Night or What You Will, edited by John H. Henneman, 1905, pp. 135. Selections from Spenser's The Faerie Queene, edited by John Erskine, 1905, pp. 179. Palgrave's The Golden Treasury, edited by Herbert Bates, 1906, pp. 459. (Longmans' English Classics.) Longmans, Green & Co., New York.

Here we have the Longmans American edition of more of their English classics, which is now quite extensive. We cannot think that this series is quite equal in form and general style or even in cheapness to the other forms in which some works of this series are printed, and yet all are valuable additions to the resources of the teacher in English.

Sir Walter Scott. The Lay of the Last Minstrel, with a short biography by Andrew Lang, and an introduction and notes by Fred W. Tickner, pp. 121. Ivanhoe (Abridged), with a biography by Andrew Lang and introduction and notes, pp. 191. The Talisman (Abridged), with a biography by A. Lang and introduction and notes by J. Thornton, pp. 204. A Legend of Montrose (Abridged), with biography by A. Lang and introduction and notes by R. Lishman, pp. 222. (Longmans' Class-Books of English Literature.) Longmans, Green & Co., New York, 1905.

Longmans and Green have done the cause of English teaching in high schools a real service by the publication of the tasteful, but inexpensive, series of which these four works of Sir Walter Scott are specimens. There are about a dozen other standards in the set, including Paradise Lost, Comus, King Arthur, Lays of Ancient Rome, Macaulay's History, etc., costing from a shilling to a shilling and a half each. The type is so clear, the notes so few yet sufficient, the introduction so brief yet stating all that is necessary, that they mark a distinct advance in text-book publication. The longer stories are gained by the abridgments.

New Creations in Plant Life, by W. S. HARWOOD. The Macmillan Company, New York, 1905. pp. 368.

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NOTE.

The New York Natural History Museum, under its director, Professor Bumpus, formerly of Clark University, has devised very interesting new ways of helping the schools of the city of New York. Teachers and pupils often visit the Museum on public days, Mondays and Tuesdays being reserved for them. They can use the Museum classroom, at which specimens can be collected, with book-lists and a library open all day. They can even procure a simple lunch. There are also large numbers of small collections that are sent to the schools in cases, like library books. These include stuffed specimens of the meadow lark, red-winged blackbird, Baltimore oriole, chipping sparrow, robin, chimney-swift, barn swallow, phoebe, house-wren, bluebird, chickadee, nuthatch, song-sparrow, owl, kinglet, downy woodpecker, crossbill, junco, English sparrow, bluejay, domestic pigeon, scarlet tanager, humming-bird, red-eyed vireo and American goldfinch. There are also collections of insects, too many to mention, mollusks, arthropods, and echinoderms. Each collection is accompanied by a set of notes describing life, history, coloration, structure, nest, eggs, food, care of young, habitat, etc. Some insects like the bee with an observation hive, house-fly, carpet beetle, mosquito, clothes moth, bedbug, milkweed butterfly, and some mollusks like the binal snails, cuttlefish, clams, oysters, whelk, cowry, limpet, big conch, squid, nautilus; also acorn shell, barnacle, prawn, shrimp, fiddler, five species of crab; echinoderms like the sea-urchin, sand-dollar, starfish; worms like the bugula, arrow-worm; various sponges, polyps, jelly-fish, brain corals, organpipes, sea plumes and fans, are described quite fully. There is also a collection of minerals, eight in number, and thirteen rocks, four ores and metals; also ten species of wood. All of these are accompanied by descriptive leaflets to which books of reference for the use of teachers and pupils are appended. We have not seen this work, but we have talked with the director and inspected the material used. It cannot fail to be of the highest value, and in the office a map with various colored pins shows at a glance the large number of schools using these collections and where each is.

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ECONOMICAL LEARNING.[1]

By M. W. MEYERHARDT.

Pedagogy in the past has been principally interested in methods of teaching. With the advent of experimental pedagogy, however, attention has shifted from the teacher to the pupil, and *methods of learning* rather than of teaching are now the subject matter of inquiry.

The whole study of the conditions and methods of learning is the immediate outgrowth of memory experiments, where the measuring of memory performance, that is to say, observation under controlled conditions, affords us a more accurate insight into memory function. Such experimental study of memory has been of two kinds.

On the one hand free reproduction, not based upon definite preceding associations, has been investigated, principally by Galton, and Wundt and his students.

On the other hand, and of more immediate import for pedagogy, learning in a narrow sense is made the object of investigation, or in psychological terms, the formation of permanent associations and their effect upon retention is determined. In other words, the effect of learning is examined and measured.

Ebbinghaus (7) is generally acknowledged to be the pioneer in experimental investigations of memory work proper, of learning, and it is principally to him we are indebted for the methods employed, which, although improved in details by G. E. Müller and his assistants (15 and 16), in principle have remained practically unchanged. For a description readers are referred to their publications.

Since then a large number of experimental pedagogical in-

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[1] The author wishes to acknowledge his indebtedness to Dr. Wm. H. Burnham for suggestions in the preparation of this paper.

vestigations of this kind, or connected therewith, have been made. To be sure, the study as yet is in its infancy, which explains the hypothetical character of many of the conclusions. Much, however, has been ascertained which can safely be made use of for practical application in the school. To sift out and résumé these facts is the aim of the present paper.

METHODS OF LEARNING.

Experiment has established the fact that wherever memorizing is left to accidental success, to the uncontrolled, planless efforts of the pupil, much time and energy are wasted; that as a rule the methods employed are psychologically wrong; in a word, that children learn uneconomically.

Learning in the school has primarily for its end a single correct recitation, and after that permanent retention, or retention of the greater part of the acquired material for a certain length of time. Again, word by word reproduction may be required, or retention of general content only may be asked for. Finally, the school sometimes demands the learning and retaining of certain material for temporary use.

When we speak of economical learning, then, there is meant *a method of learning which achieves its particular aim through the expenditure of the least possible amount of time and energy, and by means of a psychologically correct formation of such associations as are useful for assisting reproduction.*

In order to determine just what the conditions of economical learning are, it seems necessary to inquire into the essential nature of methods of learning, and we must examine separately the factors which enter into memory work.

Given the task to memorize a poem, a vocabulary of a foreign language, a list of numbers, syllables, or words, of some length, experience shows that the first step common to most persons consists in the division of the learning material into smaller parts, each one of which is learned separately by means of repetitions, and, finally, the parts are connected by repeated reading of the whole. Few learn by always reading and repeating the whole material from beginning to end, although experimental observation shows that this latter proceeding, which we will call for short "*the whole method*" is psychologically more correct than the former, "*the part method*," and much more economical. That is, it often leads with less repetitions, in less time, to a first perfect recitation, and what is of more consequence, makes possible a more confident reproduction and more accurate and permanent retention than learning accomplished by the "part method."

In order to observe how sense material ordinarily is learned, *Lottie Steffens* (22), a student with Prof. G. E. Müller at

Göttingen, made the following experiment: For twelve successive days six adults and one nine-year-old boy learned daily, the former two verses of one of Byron's poems, the latter two parts of six lines each of a German poem. All were instructed to learn each verse as quickly as possible, and to read and recite aloud until enabled to execute one errorless recitation. The observer, who had copies of the verses, designated that part which the learner read by a vertical line on the right. If he read two lines twice, two vertical lines on the right indicated that. If next he read four lines, a third vertical line of a length equal to the space occupied by four lines showed this. Thus length and succession of these lines, together with a secondary arrangement for marking lines which were read in part only, indicated the manner of learning.

It was found that all learners showed the following characteristics:

(1) Each learner divides the verse into parts.

(2) Each one repeats the parts already learned, by going back occasionally while learning later parts, either to prevent forgetting them or in order to associate the parts with each other.

(3) Each one repeats the first lines oftener than the last ones. The boy especially used for them a quite disproportionate amount of time.

(4) Difficult parts or words are learned by means of special, separate repetitions.

(5) The end of one part and the beginning of the next are connected by means of special reciting.

(6) Adults generally learn by trying to *recite* that which is partially learned, controlling this by occasionally consulting the text. The boy learned by reading only.

(7) The more difficult the material, the slower is the reading.

There were individual differences, however. Some read the whole verse first, later dividing it into parts. Others at once tried to learn a part. The boy learned most erratically, wasting as much as twenty-one repetitions upon the first two lines, while using only six for the last two, which caused irregular, hesitating recitation and superficial retention of the last part.

What are the motives, one might ask, for this common way of learning, which, as later will be seen, is so incorrect and so unpractical?

The following explanations are suggested:

(1) Attempting to learn difficult parts separately, we piece up the whole.

(2) Our natural laziness. We seem to be making better progress by learning small parts. We are diffident as to our ability to learn the whole at once.

(3) Æsthetic feeling, irksomeness, curiosity, or interest in content, frequently counterbalance utilitarian motives.

Steffens further showed that where the same persons learned a certain number of verses of a poem by "the part method," and an equal number of the same poem by "the whole method," the employment of the latter method involved a saving of time.

While the average time required for learning a verse by "the part method" was 3 min. 3.3 seconds, it was for "the whole method" 2 min. 47.4 sec., a difference of 15.9 sec. in favor of the latter.

Two learners who had shown a tendency to read the whole verse only after having several times repeated the first few lines, were instructed to learn by "the whole method." While the time for learning a verse by the old method averaged 6 min. 2.7 sec., the average for "the whole method" was 5 min. 40.8 sec., an advantage of 19.8 sec. in the latter's favor.

Two others who had been accustomed to divide each verse into equal parts and to memorize each half separately, were induced to learn by "the whole method." Their average time for the former method was 4 min. 6.1 sec., for "the whole method" 3 min. 2.5 sec., an average gain of 1 min. 3.6 sec.

Experiments with children showed similar advantages in favor of "the whole method." When nonsense syllables (up to lines of 20) were substituted for the sense material this difference in value showed less distinct, but still quite noticeably in favor of "the whole method."

The following considerations may serve for partially explaining this astonishing advantage of learning a material "as a whole" over that of learning it by parts:

(1) In learning by "the part method" the connections between the various parts must be learned separately, work, which in learning by "the whole method," is eliminated.

(2) In learning by "the part method" we associate the end of each part with its own beginning instead of with that of the next following section. These wrong associations later on disturb recitation and therefore must be artificially repressed; that is to say, they must be unlearned by memorizing with special care the transitions to succeeding parts, whereby correct associations are formed.

(3) In learning a material, not only the immediately following parts are associated, but more distant parts also aid each other by so-called mediate association, and again, we fix certain parts more firmly by localizing them, by noting their particular position in the whole. In learning by "the whole method" all these aids are utilized with each reading, while in learning by "the part method" the opportunity for taking advantage of them is almost entirely lost.

(4) In learning by "the whole method" all parts are more uniformly associated; for we are saved from devoting too many or too few repetitions upon respectively easy or particularly difficult passages or parts.

Not quite so pronounced advantages in favor of "the whole method" are shown in experiments by P. Ephrussi (9) at Göttingen, which were conducted, however, upon a somewhat different plan.

In the school as well as in life it is often necessary to memorize material the components of which must be associated by pairs. In learning the vocabulary of a foreign language, for instance, where the foreign words are to be associated with the corresponding ones of the mother tongue, or when the names of cities with their respective number of inhabitants, or historical events with the dates of their occurrence are to be memorized,—in all such cases two methods of learning are possible. The material can be learned as a whole, that is to say by reading and rereading the vocabulary, data, etc., always from beginning to end, or one can proceed to read and repeat each single pair until committed to memory, before taking up the next pair. This may be called learning by the "*cumulative method*" and would correspond to what previously has been called learning by "the part method."

Here again the question arises, by which method do we more quickly, with a smaller number of repetitions, attain our purpose, which in this instance, however, is not a perfect recitation, but retention of the associated pairs. In other words, given one of the two components to be associated, the other must be named.

Like Steffens, Ephrussi took "time required" for his scale of measurement, principally, perhaps, because it is best adapted to quantitative determination.

Twenty-four persons, consisting of 15 gentlemen and 6 ladies, all university students, and 3 girls 13, 15 and 16 years old, of a more or less perfect common school education, participated in his experiments, which extended over from 8 to 36 days, one hour daily being used.

As a first experiment 25 pairs of nonsense syllables were learned, as much as possible without secondary memory aids, that is by what is commonly called mere mechanical memorizing. This experiment furnished the following conclusion:

"With normal concentration of attention "the cumulative method" is more advantageous. When attention is defective, however, "the cumulative method" loses its advantage and sometimes even is inferior to "the whole method."

In another experiment word pairs of Russian-German vocabulary, which one may call sense-creating material, were memorized. Among the subjects were two young girls who never before had studied a foreign language. Here again "the part method" with its cumulative repetitions gave better results than "the whole method," although its advantage was less apparent than where nonsense material was used.

In a third experiment, on the other hand, where a mixed material was used, each pair being composed of a German word of two syllables and a number of three figures, learning by "the whole method" proved a decided advantage.

These discrepancies, according to Ephrussi, are to be explained as follows:

The learning process embraces two psychic processes, (1) familiarizing oneself with each part of the material, and (2) association of the parts. Formation of associations between the parts of the memory material begins in reality only when the material is a familiar one, or has reached a certain degree of familiarity. That particular method, then, is apt to prove more expedient, which produces this familiarity with the smallest number of repetitions. Wherever, on the other hand, the material is to begin with a familiar one, the economic value of a method is apt to be determined by factors which in unfamiliar material play more of a secondary part, for instance, by the degree of stimulation of attention through the manner of presenting the material.

For the advantage of "the cumulative method" in learning a vocabulary he advances the reason that in learning by that method, where each pair is repeated say 5 times, the second component of each pair besides being read 5 times *after* the first, at the same time is read 4 times *before* the first, thus establishing firmer association between the pairs than in learning by "the whole method," where this advantage is lost.

One might here remark that the same ought to hold true for learning a combination material, and perhaps even to a greater degree, because both components of the pair are of the familiar kind. As borne out by his experiments, however, this is not the case, "the whole method" showing here a decided advantage. We must suppose, then, that other factors enter which have a bearing on this question. The discussion of these, however, must be for the present deferred.

In the meantime we may summarize the conclusions drawn from Ephrussi's experiments as follows:

(1) The more familiar the material, the easier is association.

(2) In learning by pairs two kinds of association must be considered (a) association of the first with the second part, (b) the reverse, which leads, when the second part is given, to a reproduction of the first.

(3) Of two otherwise equivalent methods that one is more

expedient which with less repetitions leads to a greater degree of familiarity.

(4) In learning unfamiliar material "the part method," with its cumulative repetition of the pairs, seems preferable, provided, however, that the repetitions for each pair are not so numerous as to cause an involuntary relaxation of attention.

(5) In learning material which is familiar, "the whole method" gives better results.

In Steffens' and Ephrussi's experiments, it will be noticed, it was the time required for learning which determined the economical value of a method. Expenditure of energy and permanency and accuracy of retention were not considered. It is obvious, however, that these must be reckoned as factors which play an equal, if not more important, part in economy of learning. Our analysis, therefore, would be incomplete unless we reviewed experiments by Professor Meumann and his assistants at Zurich (8, 13, 19), whose investigations are perhaps the most comprehensive of all. Professor Meumann set himself the task to answer by experiment the following questions:

(1) By which method do we attain more quickly, with fewer repetitions, a first perfect reproduction?

(2) Which method is most conducive to a uniform distribution of attention upon the memory material and to the formation of correct associations?

(3) Which method leads to more confident reproduction and to more accurate and permanent retention?

In one experiment five school children, 2 girls and 3 boys, 8, 10, 11, 12 and 14 years old took part. The question to be answered was: "Is it more economical to divide a material into few or numerous parts?" For instance in learning a poem of 4 verses, is it more expedient to learn each verse as a whole or to divide it into smaller parts? The experiment proved that *the greater the number of parts* into which the material is divided, *the less economical* is the method of learning. The nearer we approach learning by "the whole method," the quicker and better we succeed. Experiments with adults further showed that the more *voluminous* the material the greater is the advantage of learning by "the whole method." In learning nonsense material, however, this does not manifest itself as clearly as where sense material is memorized. It is here that the differerence in value of the two methods becomes more discernible. Let me quote a few examples. Miss K. learned each day for 10 days 2 verses of Schiller's *Dido*, using on the 1st, 3d, 5th, 7th and 9th day "the part method," on the remaining days "the whole method."

It was found that on an average the verses were learned by "the whole method" with a saving of 14.5 minutes, which in view of the size of the material, 2 verses of a poem, is considerable. Moreover, as later experiments proved, the verses learned by "the whole method" were longer retained and were recited with more confidence. As to repetitions, the highest number for learning 2 verses by "the part method" was 33, while in learning "by the whole method" never more than 14, *i. e.* less than one-half were required.

Finally, it was also ascertained that verses originally learned by "the whole method" required less time for relearning than all others.

The material for another subject, Mr. K., was more voluminous. He learned 5 verses of 8 lines each by "the part method" and an equal material by "the whole method." For the first he required 45 repetitions, for the second only 12, but the time used for learning was in both cases approximately the same: about 32 minutes.

It would seem, then, that the advantage of learning by "the whole method" does not always rest, as Steffens showed, in the saving of time, but chiefly rather in the smaller number of repetitions, the psychologically more correct formation of associations, and better retention. The gain of time, it was found, was not so pronounced, because most subjects, when learning by "the whole method," instinctively read slower than when piecing up the material. They read with more stress, and difficult passages especially were read slowly and with highest possible concentration of attention.

Let us here stop an instant in order to compare the two methods in regard to the psychic processes which come into play, more particularly in regard to attention and the formation of associations.

(1) In learning by "the whole method" firmness of association between the single parts is more even, because the repetitions have been more uniformly distributed.

(2) Associations have been formed in that direction only in which they will aid future reproduction.

(3) Association of the parts with reference to their particular position in the whole has been primarily correctly formed, and is with each reading reinforced, a fact which aids reproduction.

(4) In sense material, content and logical connection aid the formation of associations more effectively when learning is by "the whole method."

On the one hand the content of the whole is easier apprehended when read as a whole, on the other, the content of each part also becomes clearer when apprehended as a part of the whole.

Now the aid which content affords in learning is often so great as to counterbalance 9/10 of the efforts of mechanical learning. By piecing up the material, therefore, we disturb the efficacy of one of the most powerful levers of memory.

(5) In learning by "the whole method," attention is riveted upon the content, and remains in more uniform tension, thus preventing mechanical learning and mere motor recitation, which are useless for memory. It is this fact mainly which explains the need of fewer repetitions, each one being utilized to the fullest extent.

In our previous discussions all conclusions were based, almost exclusively, upon the results of experiments with adults. Our particular task, however, is to determine whether these differences in the value of methods of learning hold likewise for the memory of the child.

Not to anticipate, it may suffice for the present to state that not in all points is this the case. Nor is it on consideration to be expected. Experiment has demonstrated that the general opinion, shared by pedagogues and psychologists alike, that the memory of children, and more especially the mechanical memory, is superior to that of adults, is erroneous.

Bolton (3), by his experiments with school children under 14, proved that the development of their memory depended upon age rather than general intelligence. That is to say, at a given age, even the most intelligent child's memory capacity is confined within certain definite limits, and that of older pupils is on the average greater, purely by virtue of their age.

This alone would justify the assumption that adults should exhibit greater memory capacity than children up to 14 years of age.

Alexander Netschajeff, of the University of St. Petersburg (17), made similar extensive experiments for the purpose of observing the development of memory in school children.

687 pupils from 9 to 18 years of age were examined by classes. Having been given a series of 12 sense impressions, they were supposed to write down regardless of succession as many as they could remember.

(1) They were silently shown 12 objects: newspaper, key, book, etc.

(2) They heard 12 inarticulate sounds: knocking on wood, tearing of silk, etc.

(3) 12 numbers over 10 and below 100 were read.

(4) Twelve words of 3 syllables expressing visual conceptions were read: wagon, in Russian *Koláska;* lead pencil, *Karandásch;* scissors, *nóschnizi*, etc.

(5) 12 words of 3 syllables calling up auditory concepts were read: *rytschánje* to grunt, *mytschanje* to roar, etc.

(6) 12 words were read expressing temperature and touch sensations.

(7) 12 words were read suggesting affective states.

(8) 12 abstract terms like *déjstwie* effect, *prosstránstwo* space, etc., were read.

Although the principal aim of these experiments was to determine the influence of the meaning of words upon retention with particular reference to the differences between boys and girls, we can also make use of his figures for our present purpose.

They show: (1) A steady growth of memory capacity with age, except during the period of puberty, when it is somewhat arrested.

(2) The meaning of words exerts a great influence upon retention.

(3) The memory for numbers showed the smallest relative growth.

While, for instance, the average number of objects remembered by 9-year-old pupils was 6.4, that of 18-year-old pupils was 9.7, a difference of 3.3.

The average retention of words denoting an affective state, was for 9-year-olds 3, for 18-year-olds 6.3, a difference of 3.3.

On the other hand, the average of numbers remembered was 4.4 for 9-year-old pupils, for 18-year-olds 5.3, a difference of only 0.9.

While in general, then, 18-year-old pupils are superior, in remembering numbers, which involves mere mechanical memory, the 9-year-olds apparently are nearly, if not quite, their equals.

Common observation also shows that adults experience often great difficulties in mechanical memorizing, while children accomplish the same with comparative ease. Nevertheless, let that not deceive any one; for it does not prove what it seems to. We know that all our faculties are dependent upon continuous exercise. Now it is the fact that adults are accustomed almost exclusively to sensible memorizing, to retention of the general content, which is apt to account for their inferior mechanical memory performances, not the loss of that faculty. Adults, as experiments by Professor Meumann show, can enhance their capacity so as to learn 3 or 4 times as much as a child in any given time. He found that in learning lines of from 16 to 24 nonsense syllables, adults after brief practice became greatly superior to children under 14 years of age. Younger children are handicapped by the fact that they become easily fatigued. It is utterly beyond the capacity of 8-year-old children, Professor Meumann observed, to learn a line of 16 syllables during one session, even when reading till exhausted, while adults learn lines of 24 syllables without noticeable fatigue. Moreover, it is not only lack of exercise which impairs the mechanical memory of adults, but the direction of interest and attention which are focused habitually upon the content. When obliged, therefore, to memorize mechanically, they find it difficult to readjust attention.

Professor Meumann holds that it is the small capacity of child-memory which partially explains the results of experiments with various methods of learning. It was found that in mechanical memorizing, children, to begin with, succeed better when learning by "the part method." This grows out of the fact that learning by "the whole method" at first renders them ill-humored and discouraged, because they seem to be making no visible progress. Experience, however, shows that in the mental work of children, particularly of younger ones, their disposition, their mood, is of great consequence. This is not conquered, as in the case of adults, by increased effort, but they easily succumb to the paralyzing influence of depressing emotional states. The old adage "nothing succeeds like success" truly holds here if anywhere; for the knowledge of being able to master a problem is a powerful stimulant and important factor in their work. Hence their apparent success when learning by "the part method." But this is quickly changed when, convinced of their error, their sceptical attitude is once abandoned. Then, with but little practice, it was found, children, like adults, learn quicker, with less repetitions and better retention when learning by "the whole method."

A boy 8 years old, for instance, learned verses of Goethe's Erlkönig by "the part method" with 17 repetitions, by "the whole method" with 11. Another verse, divided into two parts, required 15 repetitions; the next, learned as a whole, only 10. About the same ratio obtained in all experiments with school children.

In learning material which forms an unconnected whole, like a vocabulary, dates and the like, Meumann's experiments show likewise that it is of greater advantage to learn by "the whole method." Vocabularies were learned up to 50 word pairs (German, with its corresponding Italian, Russian, Latin or Bulgarian word), alternating in the use of "the whole method" and "the cumulative method." In each case and in every respect, he assures us, the former method proved the more economical. Uniform distribution of repetitions and more even concentration of attention account for this. Attention finds with every step something new; this prevents mere motor recitation towards which children especially incline when learning by "the cumulative method."

These results it will be noticed are at variance with those described by Ephrussi. It must, however, be borne in mind that he only measured the time required for learning, which is but a minor factor in determining the value of a method.

Furthermore, his subjects were extremely sceptical as to their ability to learn by such an unfamiliar method, an attitude which tends greatly to impair success. Finally, in learning a vocabulary, mere mechanical memorizing is involved, to which adults, as a rule, have become unaccustomed. (A former school superintendent of this city reports that pupils of the 7th and 8th grades show greater aptitude for studying German and French than older ones, whose capacity for mechanical memorizing from lack of practice obviously has grown less.) Again, the relative inability of children to concentrate attention is a well-known fact, and it does not seem safe to assume that what holds good for adults will also prove true of the child.

While experiments thus seem to make certain that generally speaking the method of learning "as a whole" is the better, it has nevertheless, as might be easily inferred, its disadvantages. In actual work, one condition of all experiments, namely, homogeneous material presenting equal difficulties throughout is rarely found. Hence, where some parts are especially difficult, all others, although already learned, must be repeated for their sake.

Again, concentration of attention in learning, say a verse of 8 lines, or a line of 16 syllables, is not as uniform as is ordinarily supposed. It rather forms a typical curve, which shows at the beginning and end a relative maximum, in the centre or just beyond a minimum of attention. As a consequence, the middle section is learned last, and is soon entirely forgotten when the whole has not been thoroughly learned.

In learning lines of 16 syllables, for instance, the first and last few are usually remembered first, the 9th or 10th last. Where the line of syllables is very long, two such depressions in the attention curve are apt to appear. In learning by "the part method" these do not occur, because here with each part attention sets in again with a maximum of concentration.

It must be obvious, then, that for practical application the value of "the whole method" might be enhanced and its disadvantages avoided by certain modifications. Meumann proposes two such modified methods which, because they combine the respective advantages of both "the whole" and "the part" methods, while eliminating their disadvantages, he chooses to call "*mediating methods.*" The following was found useful for all kinds of memory material: The whole material to be memorized was, with special regard to parts presenting unusual difficulties, divided into several sections, which were marked for the eye by means of a line, or wherever possible by an intervening empty space. In attempting to learn the material, a brief pause was made after each section, but the learner did not, as in learning by "the part method," return to the beginning of that section, but kept on reading to the end. In this way he memorized by "the whole method" and profited by all its aids, while, on the other hand, the pauses between the sections caused attention to set in again with a maximum of concentration.

Let me give an example: 12 syllables are divided into two groups of 6 each, with a space between them, and while learning them "as a whole" a small pause is inserted between groups. In learning a verse of 8 lines one can proceed similarly, with the difference that here a line is the unit.

A second method, which is employed best in memorizing a vocabulary, consists in learning by "the whole method" until certain word-pairs are found which offer greater difficulties than the average. These are marked off and practiced separately, after which one returns to reciting the material "as a whole" until it is uniformly remembered.

Ebert and Meumann (8), in an extended series of experiments, had occasion to compare the relative value of various methods of learning.

The material consisted for series No. I of 8 groups, each one of which was composed of 4 lines of 12 syllables each; for series No. II, of 4 groups of 4 lines of 12 syllables each. For series No. III the material was made up in a manner which corresponded to series No. I.

Four methods were compared:

(1) "The whole method," where each line was learned as a whole.

(2) "The part method," where each line was divided into two equal parts, each one of which was learned by itself, before the line was read as a whole.

(3) "Mediating method No. I," called for short "the 2x6 method," where the line was learned as a whole, with a pause equal to the time value of one syllable inserted after the sixth syllable.

(4) "Mediating method No. II," or "the 3x4 method," where two such pauses were inserted, after the fourth and eighth syllables respectively.

Each group consisting of 4 lines, a different method was employed for learning each line, so that in each group all four methods were tried, whereby the mediating methods were used alternately at the beginning and the end of a group.

The following chart shows for each of the six subjects, and for each of the four methods, under *a* "the average number of repetitions required for learning a single line," under *b* "the average number of repetitions for relearning a line after 24 hours," under *c* "the average percentage of saving in repetitions, when relearning." Under *A* is given the total average of all subjects for a, b and c respectively. In series No. III only 3 subjects participated.

SERIES NO. I.

Learning material. 8 times 4 lines of 12 syllables each. Averages for 1 line of 12 syllables.

METHOD.	Mr. B.			Mr. Br.			Mr. F.			Prof. M.			Miss S.			Dr. W.			Total average for all subjects. A		
	Average number of repetitions for learning one single line.	For relearning after 24 hours.	Saving in repetitions. Average percentage for one line.	Average number of repetitions for learning one single line.	For relearning after 24 hours.	Saving in repetitions. Average percentage for one line.	Average number of repetitions for learning one single line.	For relearning after 24 hours.	Saving in repetitions. Average percentage for one line.	Average number of repetitions for learning one single line.	For relearning after 24 hours.	Saving in repetitions. Average percentage for one line.	Average number of repetitions for learning one single line.	For relearning after 24 hours.	Saving in repetitions. Average percentage for one line.	Average number of repetitions for learning one single line.	For relearning after 24 hours.	Saving in repetitions. Average percentage for one line.			
	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c	a	b	c
"Whole meth.,"	14·37	4·5	68.68	13·25	5·75	56·98	11·75	4·25	63·82	20·37	8·12	60·13	18·62	6·5	65·09	14·12	5·75	59·27	15·41	5·81	62·32%
"Part method,"	13·86	5·25	62·12	11·81	6·5	44·03	7·24	4·25	41·29	18·12	7·75	57·22	17·18	8	53·43	18·43	6·62	64·08	14·44	6·39	53·69
"2 x 6 mediat.,"	11	5·25	52·27	13·25	6·5	50·94	10	4·5	55	15·5	8	48·38	18·5	5·5	70·27	15·25	7·5	50·81	13·91	6·2	54·61
"3 x 4 mediat.,"	9·5	4·37	54	11·12	5·5	50·53	8·62	4	53·59	14·25	6·37	55·29	13·75	6·87	50·03	11·75	6·5	44·68	11·49	5·6	51·35
SERIES NO. II. *4 times 4 lines of 12 syllables.*																					
"Whole meth.,"	7·5	3	60	8	3·75	53·12	6·5	3·25	50	13·5	4·75	64·81	8·25	4	51·51	13	5	61·53	9·45	3·95	56·82
"Part method,"	5·5	2·25	59·09	9·75	4·75	51·28	4·25	2·5	41·17	13·12	5·5	58·07	4·37	3	31·35	8·75	7·5	14·28	7·62	4·25	42·54
"2 x 6 method,"	6	2·5	58·33	8	4·25	46·87	5·75	2·5	56·52	9·25	4·5	51·39	7·5	3·5	53·33	11·75	6	48·93	8·04	3·87	52·56
"3 x 4 method,"	4·25	2·5	41·17	6·05	4	38·46	5·25	3	42·85	9·75	4·5	53·84	6·75	5	55·55	11	6	45·45	7·25	4·16	42·62
SERIES NO. III. *8 times 4 lines of 12 syllables.*																					
"Whole meth.,"	4·75	2·5	47·36	6·25	4	36	4	2	50										5	2·83	43·4
"Part method,"	2·75	2·25	18·18	8·62	4·5	47·79	2	1·75	12·5										4·45	2·83	36·04
"2 x 6 method,"	5	2	60	6·25	4·5	28	4·75	2	57·89										5·33	2·83	48·63
"3 x 4 method,"	4	2·25	43·75	5·25	2·75	47·61	4	2	50										4·41	2·33	47·12

In series No. I it will be seen, that objectively regarded, it is "mediating method II," or "the 3x4 method," which showed itself most advantageous, the average number of repetitions for learning as well as for relearning being smaller than elsewhere. On the other hand, "the whole method" shows by far the greatest average percentage of saving in relearning. Here, evidently, associations have been more firmly established by the originally greater number of repetitions.

In series No. II the medium average of all four methods combined for learning a single line is 8.09, which again proves the superiority of "mediating method 3x4." The medium average for relearning is 4.05, and the medium average of saving 48.63%.

It is obvious then that, other things being equal, those methods which originally require a greater number of repetitions are the ones which require fewest for relearning. This result is in accord with the fact experimentally established by Otto Lipmann (12): "that a new repetition is of greater value for such associations which at a given previous time were more firmly established."

In series No. III the medium average for learning is 4.79 repetitions, and again it is "the 3x4 method," which surpasses this more than any other. The medium average for relearning is 2.70, which proves that with practice "the 3x4 method" also gives the best results in relearning. Evidently, however, the all around greater skill in mechanical learning, which has been acquired by long continued practice, has a tendency to render the average number of repetitions required so nearly alike, that it does not seem to matter much by what method a line of syllables was originally learned.

SUMMARY.

We can now summarize these experiments on methods as follows:

(1) Each one of the old methods has its characteristic strong and weak points.

(a) The weakness of "the part method" consists in the formation of irrelevant associations, its advantage, in the setting in of attention with full vigor and energy at the beginning of each part.

(b) The weakness of "the whole method" consists in the relaxation of attention, so that the middle part of the material is not so thoroughly learned as the beginning and the end. Its advantage is to be sought for in the formation of associations in that direction only in which they shall be effective in reproduction. Again, it prevents mere motor recitation, which for the process of learning remains relatively or entirely ineffective.

(2) The "mediating" methods combine the advantages of

the "whole" and the "part" methods and avoid their respective disadvantages.

(3) The question "which method of learning is more economical" can be answered from two points of view. A method may be advantageous because it leads quicker to a first errorless recitation,—or, because it effects more accurate and permanent retention and more confident reproduction.

From the first point of view our "3x4 mediating method," where the material is learned as a whole but with two inserted pauses, is the best.

From the second point of view the best method is "the whole method."

(4) "The part method," as far as rapid learning is concerned, stands closer to the "mediating" methods than to "the whole method."

(5) The effect of the methods of learning upon memory work varies in several respects:

(a) The "mediating" methods are conducive to rapid learning and to retention of medium permanency and reliability.

(b) "The part method" effects relatively rapid learning but retention is neither reliable nor does it persist for any great length of time.

(c) "The whole method" requires often more time and repetitions for first learning, but leads to greatest accuracy and permanency of retention and to more confident reproduction.

(6) With long continued exercise in mechanical learning the psychic effects of the various methods approach each other, the learner evidently becoming more and more adept in eliminating the inexpediencies of one method or the other, and in utilizing its advantages.

INDIVIDUAL DIFFERENCES.

Earlier psychology regarded what Bacon calls "the negative instances" simply as deviations from the average, and often even as errors. With us, however, the most interesting, and frequently the most instructive thing in psychological experiments, is the observation of individual differences. Here an opportunity may present itself to reduce individual abilities to their elementary psychological conditions, and thereby bring us one step nearer to the solution of the problem of human individuality.

In connection with experiments on memorizing, among the many, two fundamental individual differences seem most important,—the difference in the rate of learning, and the difference in the accuracy and permanency of retention.

Experiments show that the difference in the rate of learning is radical, and determines entirely differentiated memory types.

The rapid learner is distinguished not only by the quickness with which he accomplishes his task, that is, arrives at a first errorless recitation, but his whole manner of learning, the effect of learning on retention, his way of relearning, intensity and adaptation of attention, and the course of gradual forgetting differ from that of the slow learner. In a word, each one of these two represents a peculiar memory type, possessing characteristics which are demonstrable in experiments.

The first characteristic, of course, which marks the rapid learner is the fact that he requires less time and fewer repetitions for the production of a first errorless recitation.

For example: Mr. Z. learned a line of 12 syllables with an average of 56 repetitions. Mr. P., who is of approximately equal age, required only 18. After four weeks' practice in learning lines of nonsense syllables Z. required 25 repetitions for learning a line, P only 6.

In learning sense material the types approach each other, because here interest in and special ability for certain material exert an influence; still they remain entirely distinct. In children of approximately equal age similar differences were found. The amount of time expended in learning is naturally proportionate to the number of repetitions required.

On the other hand, the rapid learner also forgets more quickly. With him one errorless recitation does not insure retention for any great length of time. His whole way of learning tends towards temporary rather than permanent retention. In reproducing he recites restlessly and more rapidly than when learning. By means of the after images of sense impressions he effects mere immediate retention, which lasts only as long as the direct after effects of the sense impressions, and disappears with them. As a consequence, while reproducing, he is always alert to make use of anything in his earlier learning which might assist memory, such as pitch, tempo, rhythm, and the like. Just as soon as he feels certain of having learned the material, he is anxious to recite at once, which in fact is necessary, for in some instances it was found that two minutes after learning a line it could no longer be reproduced, and that, after five minutes, forgetting had so far progressed that the learner was no longer able to recognize syllables as having occurred in a line which had been learned. Thus the typically rapid learner as a rule proves likewise the rapid forgetter.

Quite different is the behavior of the slow learner. He requires more time and repetitions for learning, and is not at all anxious to recite at once, but, on the contrary, often asks for some little time, presumably in order to coordinate that which has been learned. He reproduces with great confidence, recites slower than when learning, and after some minutes still reproduces equally well.

Many other qualities distinguish the two types. The rapid learner is unable to recollect a syllable, when once it has been forgotten, while the slow learner, by forcing memory, usually recovers the missing syllable. The rapid learner depends a great deal upon the first syllable of a line, and in forgetting that, he forgets the whole line. The slow learner is able to begin in the centre, and to reconstruct the line backward and forward. The slow learner abides for a long time by the reading of the material, while the rapid learner soon attempts recitations, controlling these by occasionally consulting the text. The attention of the rapid learner is easily diverted by trifles, which the other does not notice at all. The rapid learner is all excitement, imbued with the one idea to achieve his aim as quickly as possible. The slow learner feels worried only about his ability to succeed without the expenditure of too great an amount of time.

Again the relative gain by practice with the slow learner is usually much greater than with the rapid learner. The above mentioned Mr. Z., during a long continued series of experiments, required at first 56 repetitions for learning a line of syllables, after some months' practice only 19, a gain of about 66 per cent. Mr. P. learned at first with 18 repetitions, later with 8, a gain of less than 56 per cent.

Nevertheless, while the rapid learner, when free reproduction is in question, seems to forget more quickly, it must not be assumed that he is also at a disadvantage when relearning is demanded. Here he is able to utilize most fully the least remaining traces of his former efforts, and therefore shows quite often a greater saving in repetitions.

Finally, in regard to immediate memory, the rapid learner makes a better showing than the slower one. The greatest number of syllables P. could repeat after hearing them once was 8, Z. only 3. A child of the rapid learning type managed to remember 6 syllables, another pupil of the same age only 3.

If asked to explain the causes for these differences in types of learning, we are forced to confess that nothing definite is known. Physical condition seems to have a bearing on the phenomenon. Alexander Netschajeff (17), who examined 130 school children with spirometer and dynamometer, found that of pupils of the same age the stronger ones, on an average, had also the better memory. Practice in learning and general intelligence possibly play a part. As to the principal cause, however, as Meumann points out (13), it must probably be looked for in the fundamental differences of attention in the two types. "It is chiefly the difference in the rate of central adaptation to the present activity which conditions the different effects of learning,'' he declares. The rapid learner is able to adjust his attention almost immediately to the particular demands of whatever activities he may be engaged in, and thus he attains quickly his maximal concentration, with the result that his first few repetitions have full value for memory, and no part of his efforts is lost. The learner whose adaptation is slow, on the other hand, reaches his maximum of concentration only gradually, and his first few repetitions are of little value for the purpose of retention. True enough, the rapid learner also loses adaptation more quickly, but that is not of much consequence; for he is able to regain it almost at will. This is seen plainly in the effect of pauses during the act of learning. While short rests are agreeable to both types, long intervals the slow learner avoids from fear of loss of adaptation.

Thus both qualities, rapid and slow adaptation, have their advantages as well as their disadvantages. While one of the former type can readily change from one activity to another, a feat quite difficult for the other, the latter, after not too great pauses, is able to continue his work with uniform energy and concentration, because during the interruption he has not lost his adaptation.

Again, connected in many respects with the learning types, are the so-called image types. As is well known, Charcot, in psychopathological clinics, observed that we think in images, which are the result of impressions by the various organs of sense, and we now distinguish between the predominately visual, auditory, or motor types. As might be expected, the manner of learning is conditioned by, and correlated with, the manner of imaging. The visualizer learns by means of his images of word groups and arrangement of syllables. The auditory and motor types in reading immediately transform the visual into auditory or motor images. Their mode of learning consists in the formation of a number of successive images of sounds or spoken words, or of successive innervations of speech-muscles, accompanied by corresponding movement sensations. As a consequence, in reproduction, they are obliged to run off a line of syllables, either in thought or in words, while with the visualizer retention is simultaneous association. He is able to reproduce a line equally well either forward or backward, a rather difficult task for the other types, whose association is successive.

Unfortunately, the accuracy of retention of the various image types has not been investigated. It would seem, however, that visual memory, while working slower, is the more accurate, and that as a rule it is the visual learner who in reproduction displays a greater degree of certainty.

Finzi (10), in the course of his experiments, found that visual impressions are less subject to falsification than auditory impressions. Müller and Schumann (15) and Müller and Pilzecker (16) made similar observations. Meumann reports (13) that mental calculating is done slower but with far less errors when visual imaging supplements the acoustic-motor images of numbers.

Münsterberg and Bigham (14 *a*), in experiments with numbers and colors, found that with their subjects the average of errors committed by visual memory was about $\frac{1}{5}$, to be exact 20.5 per cent, while that of auditory memory was about $\frac{1}{3}$, or more exactly 31.6 per cent. They further ascertained that when visual and auditory memory come into play simultaneously, the number of errors diminishes considerably. Thus with a subject, whose memory for numbers in the auditory series showed 14.1 per cent. of errors, and in the visual series 10.5 per cent., the percentage of errors descended to 3.9 per cent., when the numbers were at the same time seen and heard.

In all probability, then, one would not be wrong in saying that the two elementary qualifications which characterize the slow learner are slow adaptation of attention and visualizing. A perfect memory, accordingly, must be supposed to be founded on all around developed imaging. If true, this is a pedagogically important fact to which we shall have occasion to refer again.

Further individual differences are revealed by the manner in which various individuals effect primary or immediate retention. Here again typical differences in the whole conduct of learners are found, as well in regard to the behavior of attention as to the memory aids by which primary impressions are retained. To show these most clearly I can do no better than compare the conduct of two of Meumann's subjects named Mr. D. and Mr. F.

The first divergence we find in the nature of their errors when reproducing letters and numbers. F. mostly makes mistakes of position. D. mistakes of sound. That is to say, the former misplaces letters or numbers in a line, while the latter substitutes for certain letters others of similar sound. When the letters or numbers are read, D.'s memory is aided by closer print, a factor which is of no consequence for F. When made to listen with their tongue clasped between the teeth, F. makes more mistakes than D.; the former also is actuated by a strong impulse to draw back the tongue. It would seem, then, that D. obviously retains, by means of acoustic images, F. by means of imaged or actual speech movements.

The chief difference, however, is that of attention. D. directs attention not upon the single letters, nor does he actually focus the whole line, but he diverts attention so as to take in the whole uniformly, with a mere flash of consciousness. "Immediately after speaking has ceased," he declared, "I have only a weak acoustic total image of what I have heard, which rapidly becomes more distinct, and I then write quickly *as a whole* what I retain." F. describes the behavior of attention as just the reverse. "I direct attention," he says, "upon each single letter, and in writing I connect successively the single parts, giving each its place in the line."

F.'s attention, therefore, is discrete, that is to say, it is directed successively upon the single parts, each one of which is added to the others until the whole is formed. D.'s attention is a kind of total attention, which in reality begins its full work only after the whole line has been spoken. D.'s attention works analytically, F.'s synthetically.

Here, then, it would seem, we have to do with an inner connection between the memory aids of these two individuals and the behavior of their attention. It is F.'s motor way of retaining, making it necessary for him to accompany each letter with separate speech innervations, which directs his attention upon each single part of the line, while for D.'s acoustic way it is of greater advantage first to allow the single parts to melt into "a whole," in order to reproduce only that. We are justified in this assumption by the well-known behavior of attention in other mental activities, in reading, for instance, where some focus the single parts of a word, others as large a reading field as possible. We speak there of fixating or fluctuating attention.

When we approach the field of learning aided by content, conditions become more complicated as the result of a vast number of possibilities which grow out of the nature of the sense material and its effect upon the learner. The material may be on the one hand of a more perceptive or a more notional character, on the other, it may be logically more or less abstract. Again, its meaning may be simple and clear, or complicated and obscure. Grammatical construction, length of periods, alliteration, rhythm, and many similar factors are of consequence for memory. In view of the many problems growing out of these conditions, the facts which so far have been ascertained seem rather insignificant, still they are pedagogically important.

Experiments here again have brought to light the existence of typical individual differences in rational memorizing. One class of learners pays attention almost exclusively to content and logical connection, and remembers the words only in regard to the way in which they give expression to these.

In learning a poem, for instance, they depend upon as clear as possible a realization of the events, actions, persons or localities described. In learning prose, content is a still greater factor, while in addition grammatical connection of periods is noticed. Rhythm, rhyme, length of words and periods assume the character of mere secondary memory aids. With others, however, the sensory elements of the material play the principal rôle. They observe in the first place the optic elements, length of words and periods and their location in the material. Or else the acoustic elements, like pitch and rhythm of their own voice, alliteration, phonetic difficulties, and the succession of motor innervations in speaking. Here content is of secondary importance.

A third typical difference consists in the fact that some learners attempt to fix the whole material "as a whole." In learning a poem, for instance, the single lines or periods are learned only as parts of the verse, the single verses only as parts of the poem, and attention is focused upon this total connection of the content. Others, on the contrary, arrange the single parts contiguously and then join them to the whole. Their attention is synthetic, that of the former analytic.

As a fourth variety, although not of fundamental import, may be mentioned what Ephrussi (9) styles the "ingenious type." They show a tendency to learn by the aid of all possible secondary, self-constructed ancillary associations, which others dispense with altogether. A majority of these secondary resources, however, disappear in the course of a long continued series of experiments, especially when the learner makes an effort to avoid them; and they are the result of habit rather, it would seem, than of differences in memory organization.

A comparison between the memory performance of school children and that of adults indicates that the immediate memory of the former is much inferior. If we array the results of experiments with school children by Binet and Henri (2) against those with adults by Professor Meumann (8), we find that the accomplishments of children from 10 to 12 years old average about 1/3 or 1/4 of those of the skilled adult. While adults sometimes remember 13 or 14 letters or numbers, 8 or 9 syllables, 12 words, 24 words of a verse, and as much as 36 words in prose, pupils 11 and 12 years old rarely are able to reproduce correctly more than from 3 to 5 impressions.

Practice, of course, may have enhanced the ability of these adults to a point beyond the average, and again the individual performances of children of equal age often differ greatly. Some of the more gifted retain nearly twice as much as others. On the whole, however, there is hardly room for doubt that the primary memory of the average pupil is little developed, which reminds one that the old school maxim that "questions by the teacher should be brief," is psychologically well founded.

SECONDARY CONDITIONS OF LEARNING.

According to Ebbinghaus (7), the manner in which repetitions are distributed is of great consequence for economy of learning. He found that by distributing the repetitions over a more extended period of time, it is possible to learn lines of nonsense syllables with a smaller number of repetitions. While, for instance, the learning of a line of 12 syllables required 68 repetitions, which immediately followed one another, 38 repetitions distributed over three days produced the same effect.

In agreement herewith stand the results of investigations by Ad. Jost (11), a student with G. E. Müller, who found that associations are stronger when formed by repetitions distributed, with 24 hour intervals, over several days. A line of syllables, for example, learned with 30 cumulative repetitions, was not as well retained as a similar line which had been learned by repeating it 10 times each day for three successive days.

Jost further found that the more extended this distribution of repetitions, that is to say, the longer the period of time over which they are distributed the greater is the advantage for learning. He therefore formulates the law that "where two associations are of equal strength but of different age, a new repetition is of greater value for the older of the two." Experiments by Müller and Pilzecker (16) and Otto Lipmann (12), on the whole, have verified his results.

The significance of Jost's law is apt to become most apparent in learning voluminous material, where by distributing the repetitions we work in part with relatively older associations, while in forcing learning by cumulative repetitions all associations are relatively alike new.

Ebbinghaus (7) adroitly points out that the instinctive behavior of teacher and pupil have foreshadowed the findings of experiment. "The pupil," he writes, "in learning a vocabulary or rules, does not usually force memory by trying to learn them at once in the evening; he knows that it is necessary for him to go over them again in the morning. A teacher likewise will arrange his course by distributing the lessons, not uniformly over the whole time which is at his disposal, but he reserves a part beforehand for one or several recapitulations."

A number of questions which have a bearing on economy of learning can be answered only apparently with reference to the image types.

First the question "whether it is easier to learn material which is heard than that which is read." The predominately visual type, it would seem, learns better by reading only, the auditory type by means of spoken words. Meumann (13) reports of two of his subjects who retained predominately by means of acoustic images that they obtained better results when concentrating attention only upon these. Reading, in their case, exerted a disturbing influence, and when obliged to learn by reading only, attention being divided by the visual and acoustic images, they seemed to falter, for a time at least, between the two directions of attention. As a consequence learning became more difficult.

Closely connected with the former is the question : Is it more advantageous to learn aloud, half-aloud, silently or with repressed voice? Experiments by Meumann and Pentschew (19) seem to indicate that, generally speaking, for adults half-aloud learning is more favorable, for children silent learning or that with repressed voice. An explanation of the latter phenomenon is probably to be sought for in the fact that children oftener than adults belong to the predominately visual motor type.

Müller and Pilzecker (16) found in the course of their experiments that certain letters by their quality or position in a syllable tend to attract attention in a greater degree than others; that the former are remembered while the latter are forgotten. Pathologists also relate cases of aphasia where only the first letter of a word, or the first few letters were remembered. Again, that in words reproduced by patients in a very mutilated form, the vowels only, and in their right order, were frequently correctly repeated.[1]

Ziehen (25) observed that some individuals memorize the vowels quicker than the consonants, but that occasionally the reverse is the case.

These phenomena, again, must probably be explained by the difference of image types. Although not definitely established, it seems that consonants are better remembered by the visual type, vowels by the auditory type, while sounds presenting peculiar motor difficulties of pronunciation, in consequence of the longer time and greater stress which they require in learning, are apt to be better remembered by the motor type.

A further question of interest is the effect of rhythm upon learning. It can be briefly answered by saying that it is extremely unprofitable to learn without rhythm. Experiments tend to show that with some individuals the suppression of rhythmic speaking makes learning all but impossible. When continuously repeating a material we lapse involuntarily into a form of rhythmic speaking, and this is of advantage for learning. Whether one metre or the other is preferable we do not know, some liking the trochee, others the iambic. There are reasons to suppose, however (15), that as a rule that measure is most advantageous to the learner which in consequence of its frequent occurrence in the mother tongue is most familiar to him. Pentschew (19), in experiments with *German* school-children, on the other hand, found that with one exception the iambic (and not the trochee, as one might expect) was preferred.

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[1] C. Moeli: Berliner. Klin. Wochenschrift, 1891. No. 49, p. 1167.

Last, but not least in importance, is the influence which the rate of speaking or reading exerts upon learning. Experiments show that this greatly affects the despatch with which the learner reaches his goal. According to Ebbinghaus (7), the quickest possible rate is the most profitable. He found in learning lines of unconnected words and part of a poem, that a rate of 200 iambics per minute or 0.3 seconds for each measure is the most advantageous for him. He also found, when relearning the same lines 24 hours later, that those lines had been better retained which originally were learned with greater speed.

Quantz (20) reports as an incidental result of his experiments that usually those subjects remembered the most who in learning read most rapidly. Ogden (18), however, was unable to verify this result. In his opinion the number of repetitions increases with the greater speed, to such a degree that it makes learning in this way unprofitable. Whitehead (24) advocates as a happy medium between rush and hurry on the one hand and drag and tedium on the other, a rate corresponding to the beating of the pulse, but he omits quantitatively to demonstrate that as the most favorable rate. Prof. Meumann (13) holds that generally speaking neither the slow nor the rapid rate is the more profitable. "The one thing of importance," he writes, "is the adjustment of the rate of learning to familiarity with the material and to the progress of the memory work."

Thus opinions are well divided, and much can be said on either side of the question. Theoretically one would incline to the belief that firmness of association is apt to be enhanced by a growing rate of speed. For, without mentioning the well-known influence of time intervals upon strength of association, experiments on association in mediate succession also show that firmness of association diminishes correspondingly as the time-distance between its elements increases. On the other hand experiments on the forgetting of primary impressions have established the now well-known fact that recollection of these is most accurate not immediately after the sense stimulus has ceased, but about 1½ or 2 seconds later. Consciousness requires a certain time for working up an impression, and again the sense organ, the eye or ear, must regain its most favorable condition for receiving a second impression. Steffens (22), it will be remembered, observed that in learning sense material her subjects adopted instinctively a slower rate when endeavoring to memorize something more intensively. Again, Cattell, in experiments performed with a view to ascertain the rapidity of thought, found that although very familiar with German he takes 1/7 second longer to name an object in that language than in English. He takes ¼ second to translate a word from German into English and 1/20 second longer to translate in the reverse direction.

On consideration, then, Meumann's position seems well taken. When we approach unfamiliar material it is naturally disadvantageous to skim over it with eye and attention as rapidly as possible. In doing so we waste a number of repetitions upon mere reception of optic-acoustic impressions, and some more in order to understand at all the content of what is to be learned. We get the best results by reading at first slowly and attentively, accelerating the rate later on. His experiments of learning lines of syllables from a rotating drum, the speed of which was controlled by the learner, show that the rate at first is very slow, much slower than when the rate was regulated by the experimenter. Then, with periodical fluctuations, the rate gradually increased until towards the end of learning it attained an enormous rapidity, which barely permitted hasty reading. This evidently proves that the rate of learning is adjusted to the progress in memorizing.

It is just as wrong, therefore, to read uniformly slowly as to read always as rapidly as possible. In following the former course, attention, as learning progresses, is not sufficiently occupied; it deviates; the learner becomes restless, impatient, and ill-humored, which cannot fail of exerting an unfavorable influence upon learning.

To recapitulate briefly, we have found that the principal points which represent the most favorable conditions of learning are as follows:

(1) Learning by means of "the whole method" for greatest accuracy and permanency of retention, or by means of a so-called "mediating method," as one which on the average is the most economical.

(2) Learning with adults accompanied by half-aloud speaking, with children by speaking in repressed voice, with visualizers by no speaking.

(3) Learning with rhythmic speaking.

(4) Learning which utilizes most fully those memory aids peculiar to an image type.

(5) Learning which in voluminous material judiciously distributes the repetitions.

(6) Learning which adjusts the rate of reading and speaking to the progress of the memory work.

MEMORY WORK IN THE SCHOOL.

The fact which more than any other impresses the student of memory experiments with school children is undoubtedly the great disparity between labor and gain which characterizes their memory work. Experiment not only has ascertained that pupils show a peculiar tendency to learn uneconomically, but that quantitatively, as well as qualitatively, their memory is but little developed, and naturally there arise the questions: (1) By what means can learning be put systematically upon a higher plane and (2) to what extent, and how most effectively can the school enhance the memory capacity of the child?

If nothing more, these experimental results have served to convince us that learning is not the relatively simple process it is ordinarily believed to be. Memory is a faculty infinitely complex. That of our neighbor's is not like ours. Indeed, it seems quite safe to assert that probably no two individuals have identically the same memory. For all that, it is the common practice of the school to demand of all pupils, without reference to mental preparation, the committing to memory of relatively difficult material, and to the unsuccessful the teacher's only advice is apt to be: "Try again." Thus to leave memorizing to the uncontrolled efforts, the planless, fumbling attempts of the child, means nothing less than inviting a waste of time and energy, and sometimes even courting total failure.

The first demand, therefore, to be made of the school, towards which the results of experimental investigations seem to point, is that of instruction in learning in accordance with psychological rules. That is to say, the activities of the pupil should be made to conform to what research has established as the conditions of *economical learning*. Such instruction could be theoretical and possibly also practical; the former consisting of acquainting the pupil gradually, as he grows older at greater detail, with the conditions and methods of economic learning, with particular reference to individual differences; the latter of systematic memory exercises in conjunction with the regular memory work of the school, but with practice for its own sake as the principal aim.

Should we attempt to answer the question, "how can this be done?" our present inadequate knowledge, of course, would preclude the possibility of establishing a set of hard and fast rules, and we must confine ourselves to tentative suggestions, some general directions which remain to be worked out in detail.

First, concerning theoretical instruction, two points would have to be touched upon. On the one hand, the pupil must be acquainted with those methods of learning whose employment generally is productive of the greatest advantage, and on the other, his attention must be called to the general memory aids and to the idiosyncrasies of the various types.

The teacher could (1) determine individually the characteristics of his pupils by examining a few each day.

(2) Call the attention of each pupil to his own characteristic way of learning, and

(3) Show how to employ that method most advantageously, or pointing out its disadvantages, indicate how to improve it.

Such a demand, to be sure, presupposes on the part of the teacher an acquaintance with the methods by means of which the individual memory type of the pupil may be determined. These, however, need not at all be intricate. A simple proceeding like the following, for instance, may serve to give some preliminary information.

In order to determine whether a pupil retains better letters or numbers which he sees, or those which he hears, 25 letters or numbers divided into 5 lines of 5 each are arranged uniformly into a square, divided into 25 equal squares, and he is told to memorize these in the usual way from the left to the right. On being able to recite them without error, he is asked to recite those letters or numbers which from the left to the right form a diagonal line, or again, those contained within a vertical line of squares. Either one of these tasks would be relatively easy for the visualizer, who sees in his imagination a table such as has been shown him in reality. He will require for reciting these lines little more time than for the first. Not so the one who belongs to the auditory type. In his imagination exists no table which he can read. He hears an inner voice repeat to him the series of letters or numbers, but this is localized not in space, but in time. In order to find the second letter of the second line, for instance, it is necessary for him to count seven; in order to find the third of the third line he must count thirteen, and so on. All that, however, requires considerable time, much more time than for the visualizer who accomplishes such tasks quite rapidly and with relative ease.

A somewhat more complicated test, but one which is also more reliable, is the following: A number of phrases, words or syllables, sufficient to fill a certain given length of time, is presented first to the visual, next to the auditory memory, and it is then ascertained of which series the greater number has been retained. In the first series, for instance, during one hundred seconds, fifty words, one every two seconds, are exposed to the eye of the pupil, in a second series fifty words of a similar nature, one every two seconds, are spoken with a loud voice. If of the first series a pupil retains say 25, of the second only 15 impressions, auditory memory has proved itself inferior to visual memory.

Care, however, should be taken not to place too much reliance upon a solitary test. Even under most favorable conditions the results of such rough tests are far from conclusive. And if we consider that various causes, such as general fatigue, or temporary fatigue of the eye or ear, interest in the meaning of words, defective attention, etc., greatly impair the accuracy of the values, it must be obvious that only repeated tests will enable us to determine with any degree of certainty the image type.

Having next ascertained the attention type of a pupil in regard to the previously developed fundamental differences, the teacher is now in a position to call the attention of the pupil to the peculiarities of his mode of learning, enlighten him in regard to its advantages or disadvantages, and instruct him how to improve it. According to Meumann's (13) observations, such tests and instruction are both interesting and useful.

The pupils by gaining a certain insight into the mechanism of learning get more enjoyment out of the formal act of learning. The teacher acquaints himself with the causes of the success or failure of their memory work. He discovers the particularly strong or weak points of individual pupils. He observes that the attention of the one adjusts itself with difficulty to the material or to the activity of learning, that of another with relative ease; that this pupil shows a tendency to memorize preferably by the aid of the sense elements, that one rather by paying attention to content; that "one" works with more perceptive representation of the material, "another" by apprehending logical connection. He notices that some learn by joining the parts to a whole, others by regarding each part only in its relation to the whole; that here, attention is characterized by intensity of concentration and fixating progression, there, by extension and fluctuation; that to one the acoustic elements offer the greatest aid, to others, the visual or motor elements or combinations of these.

In connection herewith, however, arises a mooted question among psychologists, namely, "whether it is better to encourage pupils to make use of as many memory aids as possible, or to work only with those which are best adapted to their own peculiar type." Experiments by Bigham, mentioned above, seem to speak for the former. Theoretically, also, one could argue: "The greater the number of associative connections, the more assistance for retention and reproduction."

Nevertheless, Meumann's experiments do not seem to bear this out. He found that individuals unskilled in learning succeed better when working only with those aids to which they are accustomed. The unskilled of the acoustic type, for instance, retained better when the acoustic associations were not weakened by the subjects being told also to mind the visual images.

Furthermore, the fact that individuals unskilled in learning nonsense syllables, at first require an often quite ridiculously high number of repetitions, as much as 60 or 70, for learning a line of 12 syllables, while on the following day only ½ or ⅓ of that number are required, and later on only as few as 2 or 3 repetitions, also seems to indicate that the learner at first, hesitating between various modes of learning, wastes the greater part of his efforts, that he succeeds better after having found those memory aids which are best adapted to his own peculiar type, and lastly, that it is the skilled learner only who is able to use profitably aids uncommon to his type.

Hence, Meumann's proposition that at first children should be taught how to use properly their innate memory aids, and only when more skilled should they attempt to enhance their memory performance by gradually remedying the deficiencies of their mnemonic faculty.

A second point at issue is the question "how do rational and mechanical memorizing cooperate?"

The school rightfully insists that the former is to be preferred.

Our memory, we know, does not retain a multitude of impressions seen and heard hundreds of times. This proves that it is not repetition as such which is responsible for learning and retaining, and which makes free reproduction possible, but that, as a rule, we remember only what we have apprehended with attention and with intention of retaining.

Repetitions, then, however necessary for retention, make reproduction most sure only when they are consciously and intentionally for the purpose of acquisition. On the other hand it might be asked, "Is there such a thing as purely rational memorizing, which can dispense with all mechanical elements of mere reciting, and is that the ideal way of learning for children?

Psychological experiments show that for trustiness and permanency of retention, mere apprehension of content does not suffice, and that for permanent acquisition the mechanical element of mere repetition must co-operate. Repetitions, in fact, have the same effect for sense and non-sense material, although for the former a much smaller number is required. Side by side with attention and understanding of content, they have a peculiar independent effect on learning.

Wherever in experiments psychophysical condition, or some cause or the other, prevents a thorough concentration of attention, and the attempt is made to remedy that defect by multiplying the number of repetitions, it has been found, as our investigation of learning by "the whole method" clearly showed, that just such materials are remembered longest and leave the most persisting traces in memory. And again where, as it sometimes happens, verse-metre or content being particularly stimulating, attention is intensified, and a pleasurable emotional tone induced, in consequence of which a saving in repetitions occurs, it has been ascertained that retention of this kind of material is not as permanent. For anything, therefore, to become a permanent possession of the mind repetitions are necessary.

Moreover, especially in verbatim memorizing, it would seem, these repetitions must contain a mere mechanical element. The mere retention of ideas or association of ideas does not enable us to recite a poem. It must be supplemented by association of the optic-acoustic-motor elements of the heard and spoken words, which, though secondary in importance, are not a negligible factor in learning. While, therefore, apprehension of content and constant direction of attention upon logical connection should be accentuated, and the pupil, perhaps more than ever before, be guarded from substituting for these the mind-killing, "mechanical" learning of a text, we must ask of the teacher, as another point for theoretical instruction, to advise pupils how to effect cooperation of sensible content with the indispensable mechanical part of learning.

The objects of instruction then, according to their importance, are to be placed in somewhat like the following order:

(1) Attention upon content.

(2) The advantages or disadvantages of the various methods of learning.

(3) The characteristics of the image type to which the learner belongs; the fundamental characteristics of his attention, and the disadvantage of its slow adaptation.

(4) Cooperation of rational and mechanical memorizing.

In advocating the introduction in the school of systematic memory exercises, we meet a number of serious difficulties. In the first place we are apt to encounter the "laisser faire" theorist, who will say: Is not the pupil daily, yes hourly, engaged in exercises with the ultimate object in view of strengthening memory?

This, of course, we cannot deny; but we simply contend that the way in which it is done, is not as effective as it might be. If the method which is usually followed in the schools is a good one, we ought to be able to prove that the memory of those pupils who have followed it longest is much superior to that of beginners, that is to say, the memory ability of older pupils should be considerably greater than that of younger ones, and the average memory capacity of the higher classes should greatly surpass that of the lower ones.

But is that the case?

In order to answer, let us note the results of experiments made for the purpose of quantitative measurement of the memory performance of school children.

Binet and Henri (2) examined the memory of 380 pupils of primary schools in Paris, ranging in age from 8 to 13 years, in the following manner: Seven words in succession at a rate of one for every half a second were pronounced, and the subjects were asked to repeat immediately as many as they could remember. The number correctly remembered having been noted, another series of seven words was pronounced for the same purpose, and this proceeding was repeated 7 times in all.

The immediate memory was measured by counting all the words correctly reproduced and by dividing this number by 49, while permanent retention was determined by asking the subjects to reproduce all words which they remembered of the total series.

It was found that the number of words immediately remembered varied with age, but that this variation, for subjects of from 7 to 12 years, was remarkably small, being only 3/10 for a line of 7 words. The average number of words remembered was 4.7 correct out of a possible 7. The average number remembered in the 4th class (approximately 8-year-olds) was 4.6; 3d class, 4.9; 2d class, 4.8; 1st class, the oldest pupils, 4.9.

Still more discouraging are the results of experiments by B. Bourdon (4) who examined, from a strictly pedagogical point of view, "the influence of age upon immediate memory." About 100 lyceum pupils, ranging in age from 8 to 20 years, were individually examined, and this is the author's conclusion: The immediate memory remains almost stationary from the 8th until the 20th year. He proposes, however, to distinguish two periods: one, from 8 to 13 years inclusively, during which a slight growth was noticed; the second, from 14 to 20 years, during which no perceptible improvement was found.

Experiments by Bolton and by Jacobs, an English psychologist, on the whole have verified the above results.

We can no longer doubt, then, that generally speaking, development of memory during school life is exceedingly small. Moreover, could one not justly raise a question, how much the training of the school contributes to what little improvement there is, knowing, as we do, that the mere fact of advancing age (at least within certain limits) naturally increases mnemonic proficiency? If the general psychological and biological assumptions are correct, "that childhood and youth constitute the golden period for laying the foundations of a good memory, because then the neural substance is most plastic," could one not, on the strength of the above figures, come to the conclusion that the present methods of the school are radically wrong, and its efforts woefully misdirected?

Amazing as such assertions may seem, and exaggerated as they doubtless are, nevertheless the experimentally established fact that the immediate memory of adults who years ago have left the school and since then had no occasion to practice memorizing surpasses that of any child, must lead one to think that they are not entirely without a certain element of truth.

A second series of objections against systematic memory exercises grows out of the question: "Is it possible to improve memory and to what extent can this be accomplished?" Certain psychologists, it will be remembered, hold that no amount of culture is capable of modifying general retentiveness, and that all improvement of memory lies in the line of elaborating the associates of each of the several things to be remembered. A man's general retentiveness is a physiological quality, given once for all with his organization, and which he can never hope to change. While they admit that whatever amount of intellectual exercise is bracing to the general tone and nutrition of the brain, will also be profitable to the general retentiveness, they maintain that more than this we cannot say. Accordingly the popular notion that certain exercises systematically repeated will strengthen not only a man's remembrance of the particular facts used in the exercises, but his general faculty of remembering, must be erroneous.

When school boys improve by practice in ease of learning by heart, such improvement will, they are disposed to think, be always found to reside in the mode of study of the particular piece, due to the greater interest, the greater suggestiveness, the generic similarity with other pieces, the more sustained attention, etc., and not at all to any enhancement of the brute retentive power.

Another argument against general memory exercises is somewhat as follows: According to the modern psychological conception of the nature of consciousness, we must distinguish between various special memories. Will exercise of one of these, it is asked, be instrumental in improving other special memories of a given individual? May a composer, for instance, hope to improve his visual memory by strengthening, by means of systematic practice, his acoustic memory? Experiments, it is explained, do not justify us in answering that question in the affirmative. All we know is that practice in retaining certain impressions aids memory of that particular kind. Even though it may appear that exercising a certain special memory at the same time improves other memory forms, it is probable that such an improvement does not rest upon the exercise of general memory function, but rather upon the incidental acquisition of certain "schematic knacks," a more suitable general conduct, which facilitates learning. In brief, existence of a general memory function is denied, from which follows that general memory exercises are out of the question.

The answer to such objections is, that even though the results of systematic memory exercises were but the acquirement of a more suitable, a more correct conduct on the part of the learner, his efforts would not be entirely lost. For practical pedagogy it is of secondary importance, whether the co-exercise of other special memories rests upon one cause or another, upon the existence of a general memory function which is developed, or upon the enhancement of other factors, like attention, interest, etc. It is interested chiefly in the question whether or not a general memory exercise is possible, whether formal memory exercises tend to enhance the memory performance of the child, and only incidentally in the psychological ground upon which such an improvement may rest.

Unfortunately, however, even these questions, for the present at least, cannot be answered with any degree of certainty. About the only experiments to be reported which record a positive result, are some by Ebert and Meumann (8), and these, as Meumann himself acknowledges, are open to certain criticisms, which, though each one in itself may seem insignificant, taken altogether cannot fail of rendering the results less definite than is to be desired. Ebert and Meumann's investigations aimed at a purely objective answer to the question, "whether a general enhancement of memory occurs when one special memory is improved by exercise." Briefly stated, their experiment was as follows: First of all, in a preparatory series of experiments the present ability of all subjects was measured, in regard to immediate as well as to permanent retention. What may be termed "a cross-section" was made through as many special memories as seemed necessary to determine the effect of purely one-sided mechanical exercise upon memory as a whole. Measurement of immediate retention was in regard to (a) nonsense material, comprising letters, numbers and nonsense syllables, (b) sense material, such as logically disconnected words, (c) Italian vocabulary, (d) verses of a poem, and (e) sentences in prose. Permanent retention was measured in regard to (a) lines of nonsense syllables of various lengths, and lines of optical signs, (b) Italian vocabulary, verses of a poem and sentences in prose. Next these subjects exercised for 36 consecutive days but one special memory form, that of mechanical memorizing of nonsense syllables, when again a cross-section of the previously mentioned special memories was made in order to determine the effect. Having ascertained an improvement, mechanical memory exercise was resumed by some for 18 days, by others for 36 days, and, finally again, all special memories of the subjects were quantitatively examined.

The following are the figures obtained :

Average immediate retention

of	First Cross-section.	Final Cross-section.	Percentage of improvement.
Numbers, ...	7	11.16	59.42
Letters, ...	7.16	11.33	58.24
Nonsense syllables, . . .	5.16	7.33	42.05
Disconnected words, . . .	6.5	8.83	35.84
Vocabulary, ...	5	6.5	30
Words of a poem, ...	15	19	26.66
Words of philosophic prose,	17	22	29.41

Permanent Retention. Average number of repetitions necessary

for		First Cross-section.	Final Cross-section.	Percentage of improvement.
One nonsense syllable, . .	First learning,	2.11	0.48	77.25
	Relearning 24 hours later,	0.49	0.20	59.18
One optical sign, ...	First learning,	3.83	0.90	76.5
	Relearning,	0.68	0.30	55.88
One vocable, ...	First learning,	0.273	0.108	60.43
	Relearning,	0.056	0.036	35.71
One line of a poem, . . .	First learning,	0.75	0.47	37.33
	Relearning,	0.14	0.07	50.0
One printed line of philosophical prose, ...	First learning,	1.45	0.5	65.51
	Relearning,	0.3	10.09	70.0

The results of Ebert and Meumann's experiments show, (1) that the one-sided exercise of one special memory at the same time improved the ability of learning and retaining other memory material of an entirely different nature; or differently expressed, the exercise of one special memory resulted in the co-exercise of other special memories; and (2) that this co-exercise does not occur in a uniform way, but that other special memories are enhanced at a ratio which is determined by their relation in regard to the nature of the material and mode of learning to the special memory exercised.

As to the extent to which memory can be trained, two points must be considered: (1) How far is it possible to enhance memory ability?

(2) How far is it possible to adjust onesidedness of imaging and idiosyncrasies of memory?

Meumann's experiments justify, as he thinks, the conclusion that "the possibilities in improving memory are practically unlimited," that is to say, a given memory ability, through exercise, can be maximally developed. Two individuals who at first required 14 and 49 repetitions for learning a line of 12 syllables, learned finally with 3, sometimes with only 2 repetitions, and he expresses the conviction that *sufficient* practice will lead to the ability of learning such a line after hearing or reading it but once.

With 3 individuals, 36, 40, and 54 years of age, the effect of exercise, although considerable, was less than that of younger persons. At about the 40th year of life it seems, in spite of maximal exercise, a certain deterioration of memory can be noticed. The time of life at which memory ability is at its best, as is borne out by experiments with individuals of from 7 to 54 years of age, is that between 20 and 25. As to point 2, real defects of memory, where total inability of memory for certain elements (a lack of acoustic memory for tones, for instance) exists, cannot be much improved by exercise.

Wherever, on the other hand, a mere predominance of certain sense elements is found, equalization of such individual onesidedness to a certain extent seems possible by continued exercise.

Of the criticisms of these experiments the following may be mentioned:

(1) It may be held that the improvement is due in part to practice in all-around imaging.

(2) It may be said that not only practice in learning nonsense syllables, but the practice obtained in the different tests, learning other material, contributed to the results, and that in determining the present ability for memorizing the different material, not a cross-section, but rather a diagonal cut was made.

(3) It may be objected that the mechanical learning of nonsense syllables does not really constitute exercise of a special memory; that in practicing mechanical memorizing we perfect by practice an element which is coefficient in all learning—a general elementary condition of learning.

As stated before, however, such objections are valid only from the view point of psychology, while for pedagogy the possibility of a general memory exercise may be said to have been established. Still the question arises whether on the strength of a solitary experiment, conducted under conditions differing from those which obtain where it is to be applied, we should make such a far-reaching demand of the school as that of formal memory exercises? And granting that: is there time for such exercises in our already over-burdened schools? Are we justified in asking a development of memory at the cost of other mental faculties?

Moreover, two further considerations, one psychological, the other practical, seem to speak against the introduction of formal memory exercises in the school.

There is, on the one hand, the danger, by choosing nonsense material as the means of exercising memory, of overemphasizing the mere mechanical element of learning, and on the other, the general difficulty of preparing material which would not defeat its own aim.

Let me review in part an outline for such memory exercises, as submitted by Van Biervliet (23), a French psychologist, in order to illustrate what I mean.

"It is unnecessary to show," he writes, "that a sensation, an emotion, an image, remains more profoundly engraved in memory the more vivid the impression by which it was produced. Fortifying the impressions, therefore, means fortifying our memories. We retain that which we have seen, but we retain infinitely better that which we have looked at; we recollect a conversation which we have heard, but we recollect much better a statement we have listened to; we recall that which we have spoken in a natural voice, but much better that which we have solemnly declared."

From this he concludes, that in order to fortify the visual memory we must teach one to look at things; to improve auditory memory, teach one to listen; to strengthen motor memory, teach one to articulate.

For visual memory this may be accomplished by concentration of attention upon, and the exact reproduction of, objects presented. Beginning with simple objects, such as lines of different length, squares and objects of three dimensions, they should gradually become more complex until, finally, shaded forms are exposed to the eye for a few seconds. These the pupils should be asked to reproduce with pencil from memory as exactly as possible.

For auditory and motor memory the exercise should consist in pronunciation of series of syllables differing in length and in the nature of their formation. They should be made up so as to prevent as much as possible assistance from rational memory. First, one might propose syllables in which the vowels only differ, such as lalolilalulilo, bibabobubibabobibo. Next, series where the vowel remains the same and the consonants only vary, as lafabarakalamana. Such can be conveniently taken from Sanscrit. Finally, series of syllables in which both the vowels and the consonants differ, as labafigamoru, etc, etc.

Although Van Biervliet's essay is full of important points and valuable suggestions, the shortcomings of his plan for memory exercises are so obvious as to make it unnecessary to elaborate upon them here. If one recalls to mind the ortographic exercises of the so-called Philanthropinists and the long ago abandoned so-called "articulation exercises" of Pestalozzi, it can hardly be expected that this part of his plan will meet with serious consideration.

On the whole, then, it seems not too much to say that the time is not ripe for the adoption of formal memory exercises as a part of the curriculum of the school. What, however, can be advocated with perfect safety is the previously developed theoretical instruction in economical memorizing, a perfection of methods of learning, and above all exercise in economical memorizing in connection with the regular work of the school, by strictly following psychological rules. The needs of these, it seems to me, cannot be too strongly emphasized. Nor do I wish to question the possible advantage of formal memory exercises in particular individual cases. What is insisted upon, however, is that their general usefulness be unquestionably established and that a complete organization of such exercises be based on the combined results of psychological experiment and of practical pedagogy before assigning them as a part of the regular work of the school.

In closing, a brief résumé of the points of practical value for the school may be added :

(1) The urgent need of employing economical methods of learning, which can be met by acquainting the pupils with the value of the various methods of learning and by employing them in connection with the memory work in the school.

(2) The importance of taking into account individual differences,—the idiosyncrasies of the learning types and of the image types ; the necessity of calling a child's attention to the peculiarities of its way of learning, of showing him how to utilize most fully innate memory aids and how to improve upon

them. Out of the former grows the practical problem of the manner of presenting material in the school.

(3) Consideration of the relatively inferior memory capacity of children, which suggests that the memory performance required should be in proportion to the average age of the class.

(4) The factor of fatigue in learning, as bearing upon the behavior of attention; the need of pauses between repetitions wherever a great number is required,—a point which touches upon the practical problem of recess between recitations.

(5) The importance of correct formation of associations and the inhibitory influence of irrelevant associations. A much favored method of teachers is to induce a pupil, by questioning, to find a correct answer for himself. By this method wrong associations are easily formed.

Another reprehensible habit of teachers is that of misleading the pupil by the form in which the question is put. Every wrong answer tends to inhibit recollection of the right one, and questions should be put so as to suggest as nearly as possible a correct one. Correct answers are obtained easier when the same answer fits several questions, wrong answers, when several replies fit the same question.

(6) The economical value of several secondary memory aids, of which the most important are the judicious distribution of repetitions in learning voluminous material, and "the adjustment of the rate of learning to the progress of the memory work."

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TENDENCIES IN PUBLIC SCHOOL ADMINISTRATION.

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The educational system of a progressive modern community is a department of public service second to none in importance, in complexity, or in possibilities for good or ill. For its effectiveness most painstaking, persistent study is necessary, and the city or town that ignores the experience of other communities neglects one of the most important means for improving its own schools.

Realizing the importance, at the outset, of a wide intelligence upon school affairs at home and abroad, the Public Education Association of Worcester has, in this the first year of its organization, made a comparative study of school conditions that may prove of interest to others, as it has already proved to its own members. A series of charts embodying the results of this study presents concisely a mass of facts compiled and computed from the latest national, state and city reports, or obtained by direct correspondence. These facts relate more particularly to Worcester, but material was sought also from all other cities of the United States that in the census of 1900 had a population of one hundred thousand or over, and to this list were added the three smaller neighboring cities, Springfield, Hartford, and Albany, because some features of their school organization might prove particularly suggestive.

By means of these charts certain tendencies in educational matters can be easily recognized. One of the series represents by plotted curves a study of the school population of Worcester for the twenty-one years ending with the latest report yet issued, that of 1904. Worcester is a rapidly growing eastern community, perhaps with a wider diversity in its foreign elements of population than appears in some of the cities represented in the list; still, on the whole, Worcester is an average city, and shows fairly well the general trend in this particular throughout the country. The curves of school enrollment here are at least suggestive of the conditions broadly prevalent in the United States.

During the period covered, the total school enrollment ot Worcester has about doubled. The number of scholars of foreign parentage has invariably been quite in excess of those of

United States stock, and this curve of the total foreign element has noticeably gained in comparison with that of the native. Of the various foreign elements represented, the curve shows the Irish to have been distinctly in the lead, though in 1904 the total number of scholars of Irish parentage was a little smaller than in 1883. The curve next in prominence is that of the Canadian stock, which, however, in 1890 was crossed at a wide angle by that of the Swedish. The Russian curve hardly appears at all at the beginning, but in 1904 it shows an enrollment of nearly twelve hundred. A somewhat similar rate of advance would doubtless appear in the forty other nationalities included in the Worcester census, if this line of inquiry were continued.

The problem of the public schools in assimilating all these rapidly increasing foreign elements into our civilization seems overwhelming, but it will solve itself with the generations. The newer civilization will evidently hardly be American, in the full meaning of that term as it has been understood, but it may be a civilization of no lower order than earlier generations possessed. About one-eighth of Worcester's children of school age are in parochial and private schools. It is safe to conclude that nearly thirty-five hundred of Worcester's school population are being trained at the expense of the Roman Catholic church. This fact, together with the fact of a large number of teachers in the public schools whose parents or grandparents were of foreign birth, shows to what extent the newer races are already appearing actively as factors in educational problems. The rapid advance of the curves of the Russian Jews, the Finns, the Armenians, and others, suggests more complications to follow, and also a wider range of thought and experience and need, to serve as stimulus in meeting the growing responsibility and widening opportunity for public helpfulness.

A second chart shows by proportional areas the relative distribution of the school funds of Worcester and of Springfield for the year covered by the last printed reports, and also the distribution of school population for the same year among the various departments of the educational system,—the high schools, grammar and primary grades, kindergartens, and evening schools. In Worcester the high schools have 8% of the scholars and spend 17½% of the school funds. The kindergartens have 2⅗% of the scholars, and spend 2$\frac{9}{10}$% of the school money. The evening schools influence 9⅕% of the pupils and their share of the school appropriation is 4⅕%. The grade schools include about 79% of the school enrollment, and the cost for their maintenance is 75⅕% of the total. To a large proportion of the school population, then, come about equal proportions of the advantage from money spent. Of course the evening schools cost proportionally much less, because they are continued for a far shorter period. On the other hand the grade of work done by the high schools necessitates a far higher cost per pupil, an outlay, however, which needs no words for its justification.

As compared with Springfield, Worcester spent per scholar, for the year, all grades included, $27.28 ; Springfield, $34.10. Per high school scholar Worcester spent $58.37 ; Springfield, $81.09. Per evening scholar Worcester spent $12.61 ; Springfield, $11.34. The average salary per teacher was in Worcester $636.97 ; in Springfield, $647.98.

The remaining three charts, by far the most widely significant of the series, present a comparative study of public school administration for the thirty-eight cities from which information was received. One of these three charts deals with the size, the election, and the responsibilities of school boards. The marked tendency toward smaller school-governing bodies is unmistakable. Only eight of the thirty-eight cities have boards of over twenty members; only sixteen have boards of over ten ; fourteen have ten or fewer. The argument in favor of small boards has been often presented, and needs no reviewing here. The purpose of this study is simply to recognize the widely prevalent fact in the case. On the other hand, Worcester's board of thirty is this year larger by 25% than ever before,—with three exceptions the largest board in the whole list. As a town Worcester had a small school committee. With the addition of each new city ward, politics has repeatedly forbidden merging into the general welfare the sectional opportunity for local prestige. Consequently the school board must grow with the number of wards. With fifty wards, for instance, of course there will have to be a board of one hundred and fifty members, for, consistency being a jewel, each ward must be given a fair share of the advantage to be derived from holding public office.

A second tendency seems to be that toward electoral rather than appointive boards, though several very progressive cities provide for the appointing of their school boards, usually by the mayor. In Philadelphia the appointing power lies with the judges of the court of common pleas, in New Orleans partly with the city council and partly with the governor of Louisiana, and in Washington with the commissioners of the District of Columbia.

From a third column is conclusively shown the popular demand that school interests be absolutely removed from political greed and strife. More and more cities and towns are insisting that the *best* man shall be selected *from the whole community*, rather than the men most eager for public office, perhaps self-nominated, regardless of any qualification except availability within the limits of a given ward. In a large majority of the cities included in the study, the members are now chosen from the community at large. Only five, including Worcester, cling absolutely to the ward idea. Springfield cannot yet rise fully to the high plane of the majority, but elects one of its school committee at large, the other nine by wards. Jersey City, Columbus, and Providence have a similar plan. Worcester, in this particular, has not even begun the ascent to a higher conception of public welfare, but insists still upon strictly local representation. In some places the popular decision as to the best men for this office is expressed through a special school election, held quite apart from the general election of other officials, where, perhaps, political intrigue for selfish ends must figure for a while longer.

Still another tendency is that toward making the school board a strictly legislative body, and toward employing specialists for the executive work of the school department,—a superintendent of buildings, a superintendent of instruction, and perhaps others. This tendency results in placing greater responsibility upon these salaried officers, with the conseqnence that more and better work is accomplished. The superintendent of instruction is sometimes *ex officio* a member of the board, and has large influence in shaping the general policy of the school system. The lengthened term also gives stability to his position, and helps him better to discharge the duties of his office. Twenty-one out of the thirty-eight cities appoint the superintendent of instruction for a term of four years or over, or else, as in very many cases, his term is unlimited.

One very interesting tendency, brought out in several groups of details, is that toward larger independence and dignity of the school board. The very name given it by most cities is in itself suggestive. "Board of Education," "Board of School Commissioners," "Board of School Directors,"—such titles imply a right to plan and to execute independently of political machine, party dictation, or local and religious prejudice. Any wisely-selected school-governing body should be so broad in sympathies, so judicial in disposition, so liberal in culture, so generous in patriotism, that such an independent position can with perfect safety be granted its members. The great interests involved in training the citizens of the future ought not to be restricted by any mere *committee* of the city council, for a city council has neither the leisure nor the experience for the wise exercise of authority over the educational system. Of course no one will for a moment assert that, in the five New England cities still retaining the old name, School Committee, the position of the board is entirely one of subordination. It is everywhere recognized as a body of marked rank and importance, numbering on its list many high-minded, patriotic citizens. This fact, however, must be recognized, that the tendency is unmistakable in the country as a whole toward placing the school board on its own unrestricted responsibility to an extent that some of the older communities have thus far refused to allow. In Worcester, for instance, control of school buildings is in the hands, not of the school board, as would seem fitting, but of an appointee of the common council, by whom janitors and other helpers are hired and to whom they are responsible. The school revenue, also, is merely an appropriation voted each year by that same city council. In Buffalo even the formality of a school committee is dispensed with, and the common council controls the schools directly. With this one exception, however, no city seems, in this matter of independent responsibility on the part of its school board, to have advanced so little way toward the generally accepted principle as has Worcester. As will appear further on, very many school boards throughout the country are granted their own independent revenue, obtained by special tax prescribed by law.

A lengthened term of office on the school board also tends to place the system of public education on more stable footing, and to give it the dignity its importance warrants. A reasonable degree of permanence in any office is conducive to intelligent and interested work on the part of the office-holder. In nineteen out of thirty-six cities furnishing data on this point the term is four years or more. Here again, therefore, Worcester seems to be holding its department of education somewhat back from the unrestricted opportunity and confidence assigned it in a large and growing majority of our leading municipalities. If we are jealous on account of the large privilege of public usefulness our school board may have, it will be well to conquer that selfishness at once. If we are so doubtful of the integrity of school boards in general that we fear to place upon them the full and just responsibility of their position, the sooner we find out their weakness the better for society, so that we may wisely hasten to train up a new generation of patriots strong enough faithfully and honorably to discharge their high duties to the public, when called conspicuously into her service.

In other columns of statistics there is brought out the effort toward greater efficiency in the teaching force. The more direct and stronger influence of the specially trained superintendent in the particular duty of selecting and appointing teachers is calculated to promote such effectiveness. In some cases he personally makes the appointments without the formality of a board vote. Of some significance also is the average number of scholars per teacher, though facts here are liable to prove misleading. A large number of special teachers causes the average to seem unduly small, or particular schools may be temporarily depleted by the opening of parochial schools in the district, or local business conditions may for a time cause marked fluctuations. Worcester's average of thirty-two certainly implies no tendency to overcrowd the school-rooms. The average in thirty cities is a little under thirty-six.

One of the charts relates exclusively to public school finance, and brings out, among other things, the growing tendency to fix by law the amount of school revenue, and thus, as has already been shown, to place the educational system on a definite footing, independent of annual appropriations by the city government. This fixed school rate is usually stated as a certain number of mills on a dollar of valuation, which is, of course, equivalent to a certain number of dollars on a thousand of valuation,—the form of statement followed in many sections of the country. There are marked advantages in making the school revenue a definite amount that can be counted upon from year to year, though it cannot be doubted that Worcester's common council has thus far provided with some degree of liberality for public education. The average of $27.28 per pupil, as computed from data in the last printed report, compares favorably with the corresponding averages in other cities. The average of all the averages included in this column is $28.06, showing Worcester to be the eighteenth in the list.

In another connection is shown the proportion of school revenue derived from local taxation. In many cities included in the list, state or county appropriations provide largely for public school maintenance. Worcester, on the contrary, is almost wholly dependent on the city tax for the nearly two-thirds of a million dollars it annually spends in preparing the coming generations for citizenship. Five dollars and twelve cents on every thousand dollars of property valuation went last year for the support of the public schools, $28\frac{2}{5}\%$ of the total tax levy. 15% was devoted to the care of the schools, $10\frac{3}{10}\%$ to the fire department, $7\frac{6}{10}\%$ to the police system, and $4\frac{2}{10}\%$ to the care of the poor. Nearly twice as much, then, went for schools as for any other single public interest.

Evidently Worcester rightly recognizes her schools as of prime importance, and intends to provide reasonably for their maintenance. In some particulars she is falling far back toward the rear of progress in educational matters, if not in their financial support. Even so, she may represent the cities of her class in yielding sometimes to inertia before a complex problem; in forgetting, in the pressure of attaining to self-consciousness, to guard against the unworthy ambition of politicians or selfish office seekers; in failing, under the stress of material gain, to regard quite seriously enough the preeminent importance of well-disciplined character in the citizens of the coming generations. Most of our cities are doubtless alike in feeling some just pride in what the public schools have already accomplished, and in honoring the many noble workers for them and in them to-day. The past, at least, may be secure. The present we may prefer to idealize, finding comfort in what we "aspired to be" and were not. But the future of our educational system will be vastly richer if we of the present watch the signs of the times, and welcome any suggestions of improvement that may come to us through the perhaps dearly bought experience of sister cities that have successfully struggled with the complex educational problems of our country and of our age.

BOY LIFE IN A MASSACHUSETTS COUNTRY TOWN FORTY YEARS AGO.[1]

By G. STANLEY HALL.

Betweeen the ages of nine and fourteen, my parents, who then lived in a distant town, very wisely permitted me to spend most of the school-less part of these five years, so critical for a boy's development, with a large family on a large farm in Ashfield of this State. Although this joyous period ended long ago, the life, modes of thought and feeling, industries, dress, etc., were very old-fashioned for that date, and were tenaciously and proudly kept so. In more recent years, as I have come to believe that nowhere does the old New England life still persist more strongly or can be studied more objectively, I have spent portions of several summers, with the aid of a small fund placed in my hands for the purpose, in collecting old farm tools, household utensils, furniture, articles of dress, and hundreds of miscellaneous old objects into a local museum, a little after the fashion of the museums of Plymouth, Salem and Deerfield. I have interviewed all the oldest inhabitants for details of customs, industries, persons, become interested in a map of the original farms, verified in part by old walls and cellar holes and apple trees, and compiled a brief history of the town. My vacation interest grew into a record partly because so many facts of the early life and thoughts of old New England are still unrecorded and are now so fast passing beyond the reach of record, with the lamented decay of these little old towns, partly because despite certain evils this life at its best appears to me to have constituted about the best educational environment for boys at a certain stage of their development ever realized in history, combining physical, industrial, technical with civil and religious elements in wise proportions and pedagogic objectivity. Again, this mode of life is the one and the only one that represents the ideal basis of a state of citizen voters as contemplated by the framers of our institutions. Finally, it is more and more refreshing in our age, and especially in the vacation mood, to go back to sources, to the fresh primary thoughts, feelings, beliefs, modes of life of simple, homely, genuine men. Our higher anthropology labors to start afresh from the common vulgar standpoint, as Socrates did, from what Maurice calls the Ethos, and Grote the Nomos of common people, and of a just preceding and a vanishing type of civilization, to be warmed with its experience and saturated with its local color.

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I have freely eked out the boyish memory of those five years with that of older persons, but everything that follows was in Ashfield within the memory of people living there a few years ago. Time allows me to present here but a small part of the entire record, to sample it here and there, and show a few obvious lessons.

I begin with winter, when men's industries were most diversified, and were largely in *wood*. Lumber—or timber—trees were chopped down and cut by two men working a cross-cut saw, which was always getting stuck fast, in a pinch which took the set out of it, unless the whole trunk was pried up by skids. Sometimes the fallen trees were cut into logs, snaked together, and piled with the aid of cant-hooks, to be drawn across the frozen pond to the saw-mill for some contemplated building, or, if of spruce, of straight grain and few knots, or of good rift, they were cut in bolts, or cross-sections of fifteen inches long, which was the legal length for shingles. These were taken home in a pung, split with beetle and wedge, and then with a frow, and finished off with a drawshave, on a shaving-horse, itself home-made. These rive shingles were thought far more durable than those cut into shape by the buzz-saw which does not follow the grain. To be of prime quality these must be made of heart and not sap wood, nor of second growth trees. The shavings were in wide demand for kindling fires. Axe-helves, too, were sawn, split, hewn, whittled, and scraped into shape with bits of broken glass, and the forms peculiar to each local maker were as characteristic as the style of painter or poet, and were widely known, compared and criticised. Butter-paddles were commonly made of red cherry, while sugar lap paddles were made by merely barking whistle wood or bass, and whittling down one end for a handle. Mauls and beetles were made of ash-knots, ox-bows of walnut, held in shape till seasoned by withes of yellow birch, from which also birch brushes and brooms were manufactured on winter evenings by stripping down seams of wood in the green. There were salt mortars and pig-troughs made from solid logs, with tools hardly more effective than those the Indian uses for his dug-out. Flails for next year's threshing; cheese-hoops and cheese-ladders; bread-troughs, and yokes for hogs and sheep, and pokes for jumping cattle, horses and unruly geese, and stanchions for cows. Some took this season for cutting next summer's bean and hop poles, pea bush, cart and sled stakes, with an eye always out for a straight clean whip stock or fish pole. Repairs were made during this season, and a new cat-hole beside the door, with a laterally working drop-lid, which the cat operated with ease, was made one winter. New sled neaps, and fingers for the grain cradle, handles for shovels and dung-forks, pitchforks, spades, spuds, hoes, and a little earlier, for rakes; scythes and brooms were home-made, and machines and men of special trades were so far uncalled for. Nearly all these forms of domestic woodwork I saw, and even helped in as a boy of ten might, or imitated them in play in those thrice-happy days; while in elder pop-guns, with a ringing report, that were almost dangerous indoors; hemlock bows and arrows, or cross bows, with arrowheads run on with melted lead (for which every scrap of lead pipe or antique pewter dish was in great demand) often fatal for very small game; box and figure 4 traps for rats and squirrels; windmills; weather vanes in the form of fish, roosters or even ships; an actual saw-mill that went in the brook, and cut planks with marino and black and white Carter potatoes for logs; and many whittled tools, toys and ornamental forms and puppets;—in all these and many more, I even became in a short time, a fairly average expert as compared with other boys, at least so I then thought. How much all this has served me since, in the laboratory, in daily life, and even in the study, it would be hard to estimate.

The home industry in woolen is a good instance of one which survives in occasional families to this day. Sheep, as I remember, could thrive on the poorest hay, or orts, the leavings of the neat cattle. In summer they could eat brakes and polipods, if not even hardhack and tansy, and would browse down berry briers and underbrush, while their teeth cut the grass so close that cows could hardly survive in the same pasture with them. The spring lambs were raised in the shed by hand, sometimes as cossets by the children, who often derived their first savings therefrom. Sheep washing day was a gala day when, if at no other time, liquor was used against exposure; and shearing, which came a week or two later, was hardly less interesting. A good shearer, who had done his twenty-five head a day, commanded good wages, seventy-five cents or a dollar a day; while the boys must pull the dead sheep, even though they were only found after being some weeks defunct. Fleeces for home use were looked over, all burrs and shives picked out, and they were then oiled with poor lard. "Bees" to do this were often held. Carding early became specialized, and carders were in every town, but the implements were in each family, some members of which could not only card, but could even use the fine, long-toothed worsted combs in an emergency. The rolls were spun at home, novices doing the woof or filling, and the older girls the warp, which must be of better quality. It was taken from the spindle sometimes on a niddy-noddy held in the hand, at two rounds per yard, but more commonly on a reel, in rounds of two yards each. Every forty rounds was signalized on a reel by the snap of a wooden spring or the fall of a hammer, and constituted a knot, four, five, seven, or ten of which (in different families and for different purposes) constituting a skein, and twenty knots making a run. Four seven-knotted skeins of filling, or six of warp was a day's work, though now, I am told, few young women can accomplish so much without excessive fatigue. The yarn, doubled if for stockings, after being washed clean of grease, next went to the great dye-tub in the chimney corner. Butternut bark for every-day suits, indigo for Sunday suits, and madder for shirting was the rule. There were also fancy dyes and fancy dyeing, braiding, binding tightly or twisting in a white thread to get the favorite hit or miss, or pepper-and-salt effect, a now almost incredible ingenuity in making up figures and fancy color effects for loom patterns in girls' dresses. Next the filling was quilled and the warp spooled, the former ready for the shuttle, and the latter for the warping bars (both of these latter being often home-made), to which it goes from the scarn or spool-frame. In warping, the leese must be taken with care, for if the order of the threads is lost they cannot be properly thumbed through the harnesses and hooked through the reed, and are good for nothing but to make into clothes lines and the piece is lost. A raddle also acts in keeping the warp disentangled and of proper width before the lathe and tenters can hold it. Sometimes blue and white shirt-formed frock cloth was woven, sometimes kerseys and plaid dress patterns of many colors, or woolen sheets, and even woolen pillow-cases, which were as warm and heavy, although coarser, than those the olfactorial zoölogist Jäeger advises, and sells to his followers. The complication of harnesses and treadles required to weave some of the more complicated carpet, and especially coverlid patterns, evinced great ingenuity and long study, and is probably now, although the combinations were carefully written down, in most communities a forever lost art. On coming from the loom the cloth was wet for shrinkage, and the nap picked up with cards of home grown teasels and sheared smooth on one side, although in those days this process had already gone to the local fuller. Coarse yarn was also spun from tag-locks, which was, of course, home carded. Knitting was easy, pretty, visiting work. Girls earned from two to three York shillings a pair for men's stockings, paid in trade from the store, which put out such work if desired. Shag mittens were knit from thrumbs or the left-over ends of warp. Nubias and sontags were knit with large wooden needles, and men's gloves, tidies, and clock stockings with ornamental open work in the sides were knit with one hook, and the tape loom held between the knees was kept going evenings.

Domestic flax industry still lingers in a few families. The seed was sown broadcast and grew till the bolls were ripe, when it was pulled and laid in rows by the boys and whipped, in a few days, to get the seed for meal. After lying out of doors for some weeks till the shives were rotten, it was put through the process of breaking on the ponderous flax-break. It was then swingled, hatchelled, and finally hanked. It was then wound on the distaff made of a young spruce top, and drawn out for spinning. Grasshopper years, when the fibre was short, this was hard, and though ticking, meal bags and scratchy tow shirts could be made, finer linen products were impossible. After weaving it must be bleached in a good quality of air.

However it was with adults, child life was full of amusements. Children were numerous in every neighborhood, and though they were each required to be useful, they were in early years left much to themselves and were at home in every house, barn, or shed, within a mile or more. There was, of course, coasting, skating, swimming, gool, fox and hounds, and snowballing, with choosing of sides, lasting for a whole school term, with elaborate forts; cart wheel and men o' morn's in the snow; collar and elbow, or square hold wrestling, with its many different trips, locks and play-ups—side and back hold being unscientific; round ball; two and four old cat, with soft yarn balls thrown at the runner. The older girl-boys spent the hour's nooning in the schoolhouse and either paired off for small games or talks, or played "Here we stand all round this ring," "Needle's eye," "Kitty corners," or "Who's got the button." As in the age of Shakespeare the queen's maids of honor played tag, so here all children, and even adults often played child's games with gusto. In the family, as they gathered about the stove, or sometimes about the grand old fireplace in the back kitchen, with its back-log, crane, pot hooks and trammels, there were stories of the old fort, of bears, wild cats, Indians and Bloody Brook, and other probably unprinted tales perhaps many generations old. There were some who could sing old English ballads that had come down by tradition, and which had never been in print in America, and more who could sing a comic song or pathetic negro melody. Lord Lovel, Irving, Bunyan, *The Youth's Companion* and many Sunday-school books were read aloud. A pair of skates was earned by a boy friend one winter by reading the entire Bible through, and another bought an accordion with money earned by braiding the plain sides of palm-leaf hats where no splicing was needed, for the women at a cent per side. All families allowed the game of fox and geese, a few permitted checkers, and one, backgammon, which was generally thought to be almost gambling; dominoes were barely tolerated, but riddles, rebuses and charades were in high favor by old and young, and were published in all the local weekly papers. It was here that I learned that card playing, which I had often seen before but did not much understand nor care for, was very wrong, and a boy friend was taught old sledge, and euchre, up over the horse sheds on Sundays between services, by an older son of the officiating minister. There were hull-gull; cats-cradle with two series of changes; string and knot puzzles; odd and even, and most of the games, and many more than those in Mr. Newel's charming, and largely original, book entitled, "The Plays and Games of American Children," connecting many of them conclusively with the sports and pastimes of the English people in the merry olden time of Brandt. One maiden lady, whom we all loved, could spell "The Abominable Bumble Bee with his Head Cut Off," in an inverse House-that-Jack-built fashion, with a most side-splitting effect. There was the charming story of the big, little and middle sized bear, and I recall the thrill when at the turn of the story, "the dog began to worry the cat, the cat began to kill the rat, the rat began to eat the corn," etc. There were beech- and chestnutting parties; raisings; and days set apart for all the men in the district being warned out by the surveyor to gather and work on the roads with teams. Work was easy, as it was for the town, and stories were plenty. There were huskings, with cider and pumpkin pie, and games on the barn floor, when it was cleared of corn; paring bees, with bobbing, swinging a whole paring thrice around the head, thence to fall on the floor in the form of the fancied initial of some person of the other sex; and counting seeds to the familiar doggerel—one I love, two I love, three I love I say, four I love with all my heart, and five I cast away, etc. Here the apples were quartered and strung, and hung in festoons to dry all over the kitchen. There were quilting bees for girls about to marry, where the men came in the evening and partook of the new species of rice pop-corn, served in two large milk pans, with, perhaps, the most delicious home-made spruce and wintergreen beer. Spelling schools in which the parents took part, and where the champion spellers of rural districts, after exhausting several spelling books, agreed to spell each other down on an abridged Worcester's dictionary. There were weekly evening singing schools in winter, and several of us taught ourselves or each other to play the accordion, and fiddle by rote, to dance single and double shuffle on a board, and the steps of waltz, polka and schottische. Even square dances were attempted to our own music, if we could get a caller-off. This latter was here a stolen sweet, as was the furtive reading of the thrilling tales of the *New York Ledger*, especially those of Sylvanus Cobb, sets of which were smuggled around among the boys and read after retiring, or in sheep shed, hay mow, or attic, on rainy days. I must not forget the rage for trapping and hunting, by which we learned much of the habits of crows, hawks, muskrats, woodchucks, squirrels, partridges and even foxes, and which made us acquainted with wide areas of territory. In a regular squirrel hunt organized by choosing sides, and a dinner to the victors paid for by the vanquished party, as determined by counting tails, boys of my age were not old enough to participate. We made collections, however, for whole seasons, of heads, legs, wings, and tails, as well as of woods, leaves, flowers, stones, bugs, butterflies, etc.

The dull days in haying time brought another sort of education. The men of the vicinity strolled together in a shed, and sitting on tool bench, grindstone, manger, wagons, chopping blocks, and hog spouts, discussed crop prices, ditching, walling, salting cattle, finding springs with witch hazel, taxes, the preaching, the next selectmen, fence-viewer, constable, and, I suppose a little earlier, wardens, leather sealers, deer reeves, surveyors of shingles and clapboards and of wheat, field drivers, tithing men, clerk of the market, and pound-keepers, as well as the good brooks and ponds for trouting, or snaring pickerel with brass wire loops and a white-birch-bark light at night, and every sort of gossip. The old uncles who came to be the heroes of current stories, and who were, in a sense, ideal men, were shrewd and sharp, of exceeding few words, but these oracular, of most unpromising exteriors and mode of speech, with quaint and eccentric ways which made their quintessential wisdom very surprising by the contrast; while in weather signs and in drugs the old Indian was sometimes the sage. At the opposite extreme was the unseasoned fellow who can be fooled and not get the best of it if he was "run" or played some practical joke. Absurb exaggerations told with a serious air, to test the hearer's knowledge or credulity, were the chief ingredients of this lowery-day wit. Thus the ass's head was not unfrequently clapped on some poor rich fellow, green from the city, or some larger town, suspected of the unpardonable sin of being "stuck up."

In this air a good "nag" has great viability. As a boy here, *e. g.*, I often played hunt, snapping a disabled old flint-lock musket at every live thing in field and forest, for which an adult neighbor used to "run" me unmercifully before the whole shed. Years after, when I was at home on a college outing, he had not forgotten it, and for perhaps a dozen summers since I have met it. On a recent evening, when walking with a dignified city friend, he met me with the same old grind, "Hello, huntin' much this summer with Philander's old gun?" as he slapped his thighs and laughed till the hills rang, and, though

I did not hear him, I am no less certain that he said to the neighbor with him, when they had ridden well by, that I was always a pretty middlin' good sort of a fellow after all, and was n't stuck up. The joke will no doubt keep fresh another quarter of a century if my friend lives, and there are many more of the same kind. Another grind at my expense illustrates the inventive cleverness of this old Yankee type. As one of the speakers at an annual dinner in honor of the old town Academy, I had been several times introduced as a specimen of the former students of the Academy. One night, at the crowded post-office, this shrewd old farmer told, in my presence and for my benefit, the story of old Joe W., who went on the road as a drummer for the old tannery. He said Joe had just experienced religion, and was just then so all-fired honest that he selected, as the samples he was to sell from, pieces of sole leather a trifle below the average quality, instead of above, as an honest drummer should do. He was afraid to hope that Professor N., who presided at the dinner, had experienced religion, but leastways he was so all-fired honest that he leaned over backwards worse than old Joe in calling me out as a sample Academy boy, for although I was middling smart there was not a boy of them who was n't a plaguey sight smarter than I was. Another of his stories was of Stephen and Ann. They were courting, and she had sat in his lap in the kitchen one Sunday evening for some hours, when she suddenly asked if he was not tired. He gallantly replied, "Not a mite, Ann, keep right on settin'. I was awful tired an hour ago, but now I am numb." That is the way he said it was probably with my hearers and pupils.

Then there was the story of old Deacon S., who sold homemade cider brandy or twisted cider, at the rate of twenty-five cents per gallon, but who always used to get his big thumb into the quart measure, which had lost its handle, displacing its cubic contents of brandy. There was another tale of Captain A., who being cheated in a horse trade by Mr. B., called all his sons and grandsons together solemnly, as if for family prayers, told them the circumstances, and enjoined them to cheat B. back to the amount of six dollars, and if they did not live to do it to teach their children and grandchildren to cheat his descendants to the end of time; but a few months later, after another trade with B., the captain convened his family again to say that the score had been paid with interest, and to release them from the covenant. There was the story of Uncle G., who began his courtship by "creepin' in, all unbeknown," behind his best girl, stealing up close behind her as she was washing dishes, hat on and chair in hand, with the salute, "Well Sal, feel kind'er sparky to-night?" to which she coquettishly but encouragingly replied, "Well, I reckon p'raps a *leetle* more sorter than sorter not;" and how at last, the minister being away, they rode together on one horse twenty miles alone, and were married. There was the legend of old Squire V., who used to be a great favorite with the girls. Driving up to the town clerk's door one day he told him to have him "published" the next Sunday with Miss B. and drove off. Soon he returned and desired the name changed to Miss C., and finally, after several changes and some minutes of profound deliberation, settled on Miss H., whom he married. There was the tale of the turning of the Deerfield River by the two great but mystic ancestors of one family in town. It once flowed down the gap in Mr. P.'s pasture, through the pond and over the plain of the village, and was stipulated as the northern boundary of the possessions of these pioneers. They were ambitious, and had noticed that new settlers and their depredations followed rivers, so they hired hundreds of Indians to dig with sharpened sticks, day and night, one entire summer, till the stream at length washed over down a more northerly valley so suddenly as to sweep away the dusky maiden beloved by one of the pioneers; with many other romantic incidents. There was the story of the old horse jockey G., who in his travels found a negro of great strength but so simple as to agree to work for him a hundred years, on the expiration of which time the old jockey was to give him all the property and serve him a century; and who cured him of the inveterate habit of sucking eggs by showing him a dozen, apparently freshly laid, in his bed one morning just after he had risen, and frightening him out of the practice by convincing him that he had laid the eggs while he slept. There was the story of the old cat ground up in the mill with dreadful caterwaulings, and of the two bushels of good rye required to grind the millstones clean again. Another, was of the case, famous in history, of the non-conforming Baptist deacon who would not pay his town tax to support the Congregational preaching, and whose apple trees were dug up by the constable and sold for payment; of the deacon's going to Boston to the General Court, and of his return with a barrel of cider brandy drawn on two poles strapped together, one end of each in the holdbacks and the other end dragging on the ground. There were stories of a noted lady pioneer in the cause of female education, who solicited domestic utensils and produce of every kind for a young ladies' seminary, following the men into stable and around hay mow in her quest; of old Heeber, suspected of witchcraft, who lived apart and was buried outside the cemetery; of old Sloper, who had no friends, and vanished so mysteriously that gradually a detailed story of his murder by a prominent, but not beloved, citizen was evolved; of the old church, stone cold in winter, with two services and sermons from ten to four, and in summer with the rocks black at nooning with people, mostly members in close communion, eating their Sunday dinner, and picking caraway or meetin'-seed; of the waste of timber, or the greed of individuals in shacking hogs on the then extensive undivided land or common, and even of the secular variations of the compass to account for the disparity between the old surveys of boundary lines and new ones.

Evenings in the kitchen were spent in light work and gossip unremitting. Candles, in olden times before cotton, it is said, were made by loosely spinning tow-wicking. Candle rods were then whittled out or cut from cat-tails, on which wicking for a dozen candles was put, and they were hung over the back of an old, high, straight-backed chair tipped down, and dipped every few minutes in beef, or better, mutton tallow melted in the tin boiler. Of course candles grew faster on cold days, but were more likely to crack. Good iron candlesticks were rare, and at balls and parties potatoes were used, and wooden blocks. The evolution, I have heard, was first a "slut" or linen rag in fat, or a bowl of woodchuck's oil with a floating wick through a wooden button. Later came a square strip of fat pork with a thin sliver of wood thrust through to stiffen it and serve as a wick. Fire could still be made by friction of wood in an emergency. The best-raked fire would sometimes go out, and then fire must be borrowed from a neighbor. Those who wished to be independent obtained tinder-boxes with flint and iron, smudged tow and punk. Home-made matches, with brimstone and saltpetre, would catch readily, but friction matches were a great novelty. One of these friction matches, also home-made, of spruce lumber, by the boys, was "drawed" by their incredulous father, who, when he found it would really go, put it carefully in his pocket for future use.

The ideal hearth and fireplace of olden times (restored at Plymouth, and especially at Deerfield, Mass., by George Sheldon,) was indeed the centre about which the whole family system revolved. On the swinging crane, evolved from the earlier wooden lug-pole, hung from pot-hooks, chains and trammels, several species of iron pots and brass kettles, in front of a green back-log, so big and long that it was sometimes snaked in by a horse. Below, attached to the upright part of the andirons, was the turnspit-dog, revolved by hand, and sometimes, at a later date, by clockwork, for fancy roasts. There were roasters and dripping pans, and the three-legged spider, in which bread was baked, first on the bottom and then, tipped up to the coals, or else the top was done by a heavy red-hot iron cover. Here rye used to be roasted and mortared for coffee, which was later boiled in water and maple molasses. On the shelf or beam above the fire stood the foot stove, a horn of long and another of short paper lamplighters; a sausage stuffer; tin lanthorn; mortar; chafing dish; runlet; noggin; flatirons, perhaps of new fashion, hollowed for hot iron chunks; tinder box; tankard; and coffee pots; and high above all a bayoneted flint gun or two, with belt, bayonet sheath, brush and primer. Overhead on the pole hung always a hat or cap on the end, and perhaps a haunch of dried beef, with possibly a ham, a calf's rennet stretched with a springy willow stick inside; pumpkins cut into long ringlets; bundles of red peppers; braided seed corn and dried apples, the latter also perhaps half covering the roof and south side of the house. About the fireplace stood or hung the bed-warmer, the tongs, and long "slice," a hollow gourd or crooked-necked squash; candle holders with long tin reflectors; bellows; woolen holders; toasting irons; smoking tongs; pewter porringer; spoon moulds; trivet; skillet and piggin; a tin kitchen; a tin baker and steamer; a flip iron; the big dye tub always in the corner, and the high-backed settle in front. Near by stood the cupboard, displaying the best blue crockery, and the pewter, kept bright by scouring with horsetails (equisetum); sealed measures, and a few liquids, and perhaps near by a pumpkin Jack-o'-lantern, with an expression when it was lighted in the dark as hideous as that of the head of an Alaskan totem-post.

The grandma was both nurse and doctor, and the children had to gather for her each year a supply of herbs. Chief among these were pennyroyal, tansy, spearmint, peppermint, catnip, thoroughwort, motherwort, liverwort, mugwort, elecampane, opodeldoc, burdock, mayweed, dogweed, fireweed, ragweed, pokeweed, aconite, arnica, scratch-grass, valerian, lobelia, larkspur, mullein, mallow, plantain, foxglove or nightshade, osier, fennel, sorrel, comfrey, rue, saffron, flag, anise, snakeroot, yarrow, balmony, tag alder, witch-hazel, and bloodroot. Each of these, and many more, had specific medicinal properties, and hung in rows of dried bunches in the attic, and all grew in Ashfield. In Mr. Cockayne's Leechdom, Wortcunning and Starcraft, a remarkable collection of Anglo-Saxon medical prescriptions, I have identified the same symptoms for which the same herb was the specific, showing how this unwritten medical lore, as Mr. Mooney calls it in his interesting pamphlet, survives and persists unchanged.

The attic floor was covered a foot deep with corn on the ear, to be shelled winter evenings by scraping across the back of a knife driven into a board; the cobs being fed out to stock, or used for baking and smoking fires. Here, too, were tins and boxes, and barrels of rye and barley, and, later, oats, wheat and buckwheat. In the corner stood, or hung, perhaps, a hand-winnower, a tub of frozen cider apple sauce, an old hat and wig block, a few woodchucks' skins to be made into whiplashes, a coon skin for a cap, a hand-still for making cider brandy or twisted cider. So, too, the cellar, shed, hog-house, barn, sheep and horse barn, sugar-house and corn-house, were stored with objects of perennial interest to boys.

The "sense of progress," which a recent psychological writer calls a special, though lately evolved, sense, was by no means undeveloped. Men loved to tell of old times, when maple sap was caught in rough troughs made with an axe, and stored by being simply turned in their places; to show the marks on old maple trees, where their grandfathers tapped by chipping with a hatchet and driving in a bass-wood spout made at a blow with the same iron gouge that prepared for its insertion, and to describe how, later, the rough unpainted tubs with unbarked hoops, and, because smaller at the top, so hard to store and carry, and so liable to burst by the expansion of the ice on freezing, were superseded by the Shaker pails. The old days when sap was gathered by hand with a sap yoke, and stored in long troughs and boiled out of doors in a row of kettles on a pole or crotches, were talked over, with complacent pity, perhaps, while modern pans on a new arch and in a new sugar-house were kept going all night during a big run which had filled every tun and hogshead, while the best trees were running over.

Hour-glasses, especially to spin by, and dials, were sometimes used, and there were many noon-marks at intervals over the farm. In many families, even where coal and kerosene stoves are used, along with wood, oven-wood is still cut for the old brick oven, which Christmas time, at least, if not once every week or two through the winter, is heated, and then swept out with a wet birch broom. First, the rye and Indian bread is made up in a bread trough and then put on the broad, meal-sprinkled peel, with hands dipped in water to avoid sticking, and very dexterously thrown in haycock and windrow shapes, perhaps on cabbage leaves, on to the bottom of the oven. When this was done it was still so hot that pies could be baked, and last of all, a bushel of apples was thrown in and the week's baking was over. Many could then tell of the time when, with pudding or mashed potatoes and milk for the meal, no table was set, but each took a bowl of milk and helped himself from the kettle on the stone; or again, the family gathered about the well-scoured table, with no individual plates or butter knives, or waiting on the table, but each took a slice of bread and helped himself from the meat dish, or dipped the brown bread into the pork fat with forks. Wooden, pewter, then earthen plates, was the order of evolution. So, in the dairy, milk used to be set in wooden trays, then in thick, brown earthen bowls, before the modern milk-pans came into vogue. The evolution of the skimmer from the clam shell, through a rough wooden skimmer; of churning, from a bowl and paddle on to the old dasher churn; of straining milk, from the linen rag strainer, up; of bails, from the ear and peg fashion, on; the history of the artistic forms of butter balls, and the stamps used; the very gradual development of the scythe-snath, which no artist ever represents correctly, to the present highly physiological and very sharply discriminated forms, as well as of the hoe and pitchfork; why are not these and the growth of the corn-sheller, hen-coop, plough, mop, the story of the penstock, the broom, from a bush or bundle of twigs, up through the birch broom with fibres stripped both up and down; of window transparencies, from the hole and oiled paper, etc., as scientific anthropological themes, as the evolution of the fish-hook, arrow-head and spear? Why is not the old soap-making process, with the lye, strong enough to support an egg, dripping from the ash barrel on the circularly grooved board or stone, and the out-of-doors boiling and basket straining, etc.; why is not the old-fashioned semi-annual geese-picking day, with the big apron, great vase-shaped goose basket, and the baby's stocking drawn over the goose's head to keep it from biting; why is not cheese making, when the milk from three families was gathered in a big tub, coagulated with a calf's rennet, broken up into curds and whey by the fingers, scalded, chopped, salted, perhaps saged, hooped, turned, and pared of those delicious curds, and daily greased all summer; why is not the high festivity of road breaking in winter, when all the men and oxen in the neighborhood, often twenty yokes of oxen in one team, turned out after a long storm and blow to break out the roads which the town had not discontinued for the winter, to church, stores, doctor and school, when steers were broken in, sandwiched between the yokes of old cattle, where often up to their backs in a drift, with a sled to which ploughs were chained to each side and a dozen men and boys on it, they could only wait, frightened and with lolling tongue, to be shoveled out; why are not the antique ceremonies and sequelæ of butchering day, and the fun and games with pluck and lights and sausages, which city-bred boys were told, and said to believe, are caught like fish; the process of making pearl-ash and birch vinegar; cider-making; the manifold summer beers and other domestic drinks, etc., quite as worthy of investigation, of illustration in museums, as the no more rapidly vanishing customs of savage tribes?

At the place and time of which I write many domestic industries were more or less specialized. Farmers' sons often went away to learn trades. Broom making, *e. g.*, was the evening occupation of one member of the family I knew, and I saw the process of planting, breaking, tabling, hatchelling, for the seed was worth about the price of oats, bleaching with brimstone in a big down cellar, etc. Tying was the most interesting process. It included arranging the hurls, braiding down the stalks on the handle with wire, pressing in the great vise, and sewing with a six-inch needle, thimbled through by leather palms. I was allowed to sandpaper the handles, and once, in a time of stress, when a man was making forty plain Shaker brooms per day, even to put on the gold leaf. The local tanner allowed us to run among his vats, and see the hides salted, pickled, washed and limed, and, best of all, skived over the big beam. Last summer this tanner told me he believed his eighteen months in tanning an ox hide and the six weeks required by modern chemical methods, represented about the relative durability of the two leathers. His trade has lasted on, despite such competition, because his townsmen have something the same idea. Within boy-range, too, was a cooper's shop, a gunsmith, a family who made baskets, a small carding mill, turning shops where wooden spoons, bowls, sieve rims, pen handles, plain broom handles, etc., were made, a general tinker and solderer, besides carpenters, blacksmiths, shoe and harness makers. Some farmers specialized, more or less, in sheep; others in young cattle, or pigs and horses. Some were always lucky with corn, others with rye or wheat, buckwheat, potatoes, grass, etc., to which they had mainly settled after much experiment, or to which the traditions of the farm or family inclined them. Thus, in fine, there were many grades of progress and versatility. Many of these old home industries I can still practice and have added to them by "lessons" in Germany. All come handy in the laboratory. I know I could make soap, maple sugar, a pair of shoes, braid a palm leaf hat, spin, put in and weave a piece of frocking or a rag carpet, do crude carpentry, farm and dairy work, and I envy the pupils at Tuskegee who can do more of these things and better than I.

I have alluded to but few of the occupations of these people. Their commonest industries—planting, fertilizing, gathering each crop—have been revolutionized by machinery and artificial fertilization within twenty-five years. These, and their religion and beliefs, and domestic social customs, methods of doing their small business, are all fast changing. The women are haggard and worn with their work, the men are sometimes shiftless, and children are very rare. The heart of these communities has left it, and only the shell remains. The quaint, eccentric characters that abound in these towns, types of which may be found faithfully depicted by Mary E. Wilkins or in Mary B. Claflin's "Brampton Sketches," or in a few of the sketches in "Profitable Tales," by Eugene Field, are for the most part types of degeneration well recognized by alienists and characterized by Morel. These are quite different from the no less rustic characters in De Gaspe's "Old Canadians, or the work of Du Pray's School." Life then and there, although perhaps a century or more later than that described in the books of Alice Morse Earle, did not differ much from it. Did the earlier generations work too hard in digging stumps and stones, and laying the hundreds of miles of heavy stone wall and clearing the timber? Were the conditions of life too severe? Is our race not adapted to the new conditions of climate, soil, water, and, as Dr. Jarvis said, is it still a problem whether the Anglo-Saxon race can thrive in its new American home, or is this but an incident, an eddy in the great onward current of progress? I have no answer, but I know nothing more sad in our American life than the decay of these townlets.

Nowhere has the great middle class been so all-controlling, furnished so large a proportion of scientific and business leaders, been so respectable, so well combined industry with wealth, bred patriotism, conservatism and independence. The farm was a great laboratory, tending, perhaps, rather more to develop scientific than literary tastes, cultivating persistency, in which country boys excel, if at the expense of versatility. It is, says Prof. Brewer, the question with city parents what useful thing the children can do; while in the country, where they are in great demand on the farm they are, in a sense, members of the firm. Evenings are not dangerous to morality, but are turned to good account, while during the rowdy or adolescent age the boy tendency to revert to savagery can find harmless vent in hunting, trapping, and other ways less injurious to morals than the customs of city life.

Some such training the heroes of '76 had; the independent conditions of communities like this was just the reverse of that of the South at the outbreak of the Rebellion; such a people cannot be conquered, for war and blockade would only drive them back to more primitive conditions; and restore the old independence of foreign and even domestic markets. Again, should we ever have occasion to educate colonists, as England is now attempting, we could not do so better than by reviving conditions of life like these.

I close by mentioning an interesting new educational experiment, as a bright spot in this sombre present, which was somewhat feebly but happily tried in Ashfield, as a result of the recently awakened interest in its own antiquities. A prominent citizen, once a teacher, has studied from sources largely unprinted the history of the town, which connects it with the Revolution, and even the French and Indian wars, and on the lines of old map he has made of the original town surveys, gave an hour per week during part of a winter in teaching history, from a local standpoint in the little academy, with its score of pupils, and adding many of the antiquities such as this paper has referred to, with free use of the museum, and all with excellent results. A village pastor, who is an excellent botanist, took the class a few times each year on excursions, and the older girls have gathered and pressed for him in a school museum all the Ashfield plants and grasses, on the basis of which he taught a little botany gratuitously. The Doctor co-operated with them and talked on physiology and hygiene, and brought his miscroscope and other instruments. A student of an agricultural college has gathered all the Ashfield rocks and minerals and taught geology. He has gathered cabinets of the local animals, birds, eggs, butterflies, and insects, which a summer resident makes a basis of some instruction. A summer boarder was drafted in to teach drawing to all comers half a day per week. This experiment, in what I consider co-operative education, begins at home, with what is nearest and often despised. The local Faculty about the teacher give but little time, but their teaching is full of interest and stimulus. They strengthen the teacher whom they really guide, and bring home and school nearer together. This new curriculum is without expense, and altogether may prove a suggestive novelty. To-day old domestic industries of the age of the tinder-box and stone milk pan and niddy-noddy are taught by a specialist to history classes from the city schools in turn, by Miss H. B. Merrill, in a central museum of American antiquities in Milwaukee.

IDEALS OF A GROUP OF GERMAN CHILDREN.

By Henry H. Goddard, State Normal School, West Chester, Pa.

The following study is offered as a contribution to the growing literature on children's ideals. It is, so far as the writer knows, the first extended study on this subject "made in Germany." It is of special interest because it enables us to compare American and English ideals with those of children not only of different nationality and language, but educated under a radically different system, and all belonging to the same social class.

The material was collected by the writer in Göttingen in January, 1904.

The test was the one used by Earl Barnes and others. As we translated it, it read in German *Welcher Person* (*unter denen, die du gesehen oder von denen du was gehört oder gelesen hast*) *möchtest du am liebsten ähnlich sein? Warum?*

The teachers were carefully instructed how to give the test, and responded with the intelligence, faithfulness and carefulness for which they are famed.

Göttingen schools are among the best in Prussia. Altogether it would seem that the material is about as satisfactory as one could desire, except that there is not quite enough of it. This defect results from the timidity of the directors of two schools. They took the questions but failed to get the answers. It has been shown by experiment that 100 papers of each age of each sex is the most satisfactory number. Our material is short in only one or two points.

The material has been carefully worked over and classified, mainly on the lines laid down by Earl Barnes in his "Type Study."

Table I gives the results. The figures are all percentages, except, of course, those giving the number of papers.

Sex Differences.

Our study shows no sex difference in the choice of acquaintances. This is interesting in the face of the fact that other studies, both American and London, have shown a decided difference in favor of the girls. The peculiarity is probably to be explained by the fact that German boys choose father and uncle as their ideal much more frequently than Americans do, and more frequently than the girls choose mother and aunt.

TABLE I.

Classification of answers with percentages of each age in the respective classes. Upper line boys; lower line girls.

Ages		6	7	8	9	10	11	12	13	14	Total
Number of papers	B		120	99	131	124	103	97	103	64	841
	G	23	38	76	135	84	122	101	108	62	749
Acquaintances	B		70	62	59	46	37	27	21	37	47
	G	61	58	75	61	48	29	36	42	33	47
Father or Mother	B		58	34	36	22	12	10	4	14	25
	G	35	29	33	17	16	12	15	17	10	18
Other relative	B		6	15	23	12	11	10	9	21	13
	G	17	11	13	18	9	7.5	9	6	12	10
Other acquaintance	B		6	13	8	12	14	7	8	2	9
	G	9	18	29	26	23	9.5	12	19	11	19
Public Persons	B		2	19	23	39	46	57	62	53	35
	G	0	14	11	14	27	24	32	35	29	23.5
Emperor or Empress	B		2	17	16	20	16	12	7	3	12
	G	0	3	10	9	12	10	7	9	3	9
Historic German	B		0	2	7	19	28	37	47	42	21
	G	0	11	1	5	11	11	22	23	23	12.5
Historic Foreigner	B		0	0	0	1	1	7	8	8	3—
	G	0	0	0	0	4	3	3	3	3	2
Character from Fiction	B		0	2	4	6	6	7	6	8	4
	G	0	0	0	3	9	8	14	7	27	8
Religious Persons	B		3	14	8	6	8	4	8	3	7—
	G	22	26	8	9	16	26	13	16	14	15
God	B		1	1	0	0	1	2	2	0	1—
	G	9	11	0	1.5	0	1	0	0	0	1+
Jesus	B		2	9	5	2	3	2	6	3	4
	G	13	15	8	5	13	8	4	3	5	7
Persons from Bible	B		0	4	2	4	4	0	0	0	2
	G	0	0	0	2.5	2	17	9	13	9	7
Opposite sex chosen	B		33	13	16	11	9	6	1	1	12
	G	35	58	26	27	44	31	38	23	33	33
Not answering	B		31	3	0	3	4	5	3	0	6—
	G	17	2	6	13	0	13	5	0	0	6+

In fact, this is so marked that the boys would far outrun the girls in the choice of acquaintances were it not for the fact that girls choose many schoolmates. Reference to Table I, under "other acquaintances," shows in the total, 19% for girls to 9% for boys.

When it comes to "Public Characters" the boys lead by about 12%, which agrees with other studies. This difference is explained by noting that girls choose more characters from fiction and more religious characters than boys. These two groups are not included under either "Historic" or "Acquaintances."

Girls choose twice as many "Religious characters" as boys. Does this not offer substantial support to the view that woman is more religious than man and that the difference is fundamental since it manifests itself thus strongly in childhood?

The opposite sex is chosen much less often by girls than is the case in other studies. Of this we shall speak later.

The same percentage of boys as of girls fail to answer the question at all.

PECULIARITIES OF DEVELOPMENT.

If we now examine the data for evidence of the expanding of the personality as shown by the growth from acquaintance to public character ideals, we are impressed by the slowness of the change.

The acquaintance choice starts with 66 at seven years of age and ends with 35% at fourteen. In other studies the curve has dropped to 35% at age ten; and at age fourteen it stands at 7%. The following curves show this graphically:

Acquaintance Ideals.

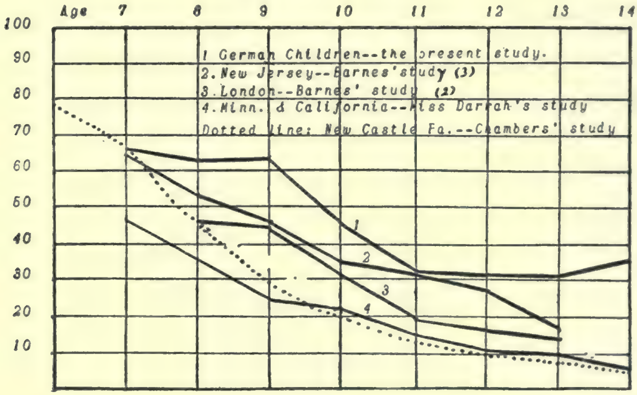

FIG. I.

Just as the acquaintance curve starts higher and falls more slowly than in any of the other studies, so the curve of "Historic and Contemporary Ideals" starts lower and mounts more

Historic and Contemporary Ideals.

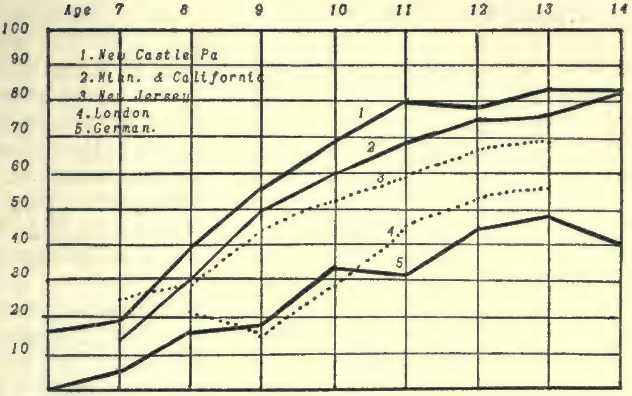

FIG. 2.

slowly than any of the others. Indeed the difference is startling! Beginning with no public characters at six years of age, we find 4.5% at seven, 48% at thirteen, and 40% at fourteen. All of the American studies are above this at nine years, while at fourteen two of them are above 80%—twice the German percentage. Of 1,600 children (nearly) in these schools less than 21% choose as an ideal a great and famous man either of the present or the past—not counting Bible characters.

It must not be forgotten that we are dealing with children of the lowest classes with whom the struggle for existence is the principal thing. On the other hand they have had eight years of schooling under excellent teachers.

Göttingen itself is by no means wanting in historic associations that might suggest ideals, but they are almost without effect. The old city wall has been converted into a beautiful promenade shaded by lindens. At a point in this promenade, which is passed every day by hundreds of these children, is the house in which Bismarck lived while in Göttingen. A tablet over the door states the fact. Up on the hillside where all Göttingen goes for its airings on Sunday, extends a large and beautiful park. In this is a great "Bismarck tower," from which a view of the whole city is obtained. In another direction is the "Bismarck Säule," a stone platform surrounded by eight massive columns which are surmounted by huge iron cauldrons, in which great fires are built on the anniversary of the great statesman's birthday. In spite of all this, Bismarck is the ideal of ten boys and two girls out of 1,590 children.

Göttingen has a University of 1,200 students. It appears to have not the slightest influence upon the ideals of these children.

A little park which forms almost a thoroughfare for many of these school children contains a conspicuous monument to the mathematician Gauss and W. E. Weber, who discovered and operated a telegraph line in Göttingen before Morse operated his in our own country. There is a statue of King William IV, one of Woehler, of G. A. Bürger, the poet, and others of less importance. Not one of these is mentioned by our children.

A study of the curves Figs. 1 and 2, suggests that possibly we have to do with something deeper than environment. In Fig. 1 it will be seen that the London curve keeps company with the German rather than with the American. In Fig. 2 the striking parallelism between the London and the German again connects the two.

Is it not perhaps a question of the old country versus the new? Like old people they are content with their immediate circle of friends. In America all is relatively new and the whole spirit of our civilization is that of unrest, reaching out after new things and new people. The school children partake of the spirit of the country. Possibly Minnesota and California in comparison with New Jersey and New Castle, Pa., may show the same thing. But, of course, we must have more studies in order to be convinced that there is this difference between the East and the West in our own country.

Again, may the feeling one has abroad be a true feeling when it seems that the European is self satisfied, contented with his immediate environment and acquaintances, does not care to know about men or matters afar off? In America, when a strange place or person is mentioned, the first question is, "Where is it? What has he done?"

This feeling that we are here dealing with a unique group is intensified by a perusal of the list of persons chosen as ideals by the German children in the "Historic and Contemporary" group. Bible characters are not included.

The following are chosen by both boys and girls. The figures in the first column are the number (not per cent.) of boys, and the second, the number of girls naming the person.

	B.	G.
Emperor William	100	20
William I	23	5
Luther	20	17
Frederick the Great	17	3
Bismarck	12	2
The Great Elector	3	2
Socrates	2	1
Goethe	2	1
Gustavus Adolphus	2	2

	B.	G.
Ludwig Richter	1	4
Diogenes	1	2
Frederick III	1	1

The following are chosen by boys only:

Siegfried	12	Frederic II	2
Blucher	12	Francke	2
Armien	8	Wallenstein	2
Frederic William	8	King of Saxony	1
Charlemagne	7	Reuter	1
Capt. Schill	6	The Pope	1
Pickart	5	Emperor Louis	1
Schiller	4	The Crown Prince	1
Andrew Hofer	4	Falb	1
Prince Henry	4	Tacitus	1
Zieten	3	Prince Eugene	1
De Wet	3	Botha	1
Tilly	2	Boniface	1
Tell	2	Alexander the Great	1
Sabuski	2	Alaric	1
Roland	2	Jansen (the explorer)	1
Theodore Korner	2	Ludwig Wetsel	1

The following are chosen by girls only:

The Empress Augusta	38	Frederick Barbarossa	1
Queen Louise	43	Queen Elizabeth	1
Hannibal	4	Frederick the Wise	1
Goethe and Schiller	2	Queen Henrietta	1
Werner von Kiburg	2	Duke of Schwabia	1
Jungfrau von Orleans	2	Pestalozzi	1

Chambers (4 p. 109) gives the names of all those mentioned by a half of one per cent. or more of the children. There are fourteen in the boys' list and fifteen in the girls'. In the foregoing lists fifteen of the names chosen by boys are above the half-of-one-per-cent. mark, but only six of the girls.

The Emperor leads, but has only 12% of the boys and less than 3% of the girls. George Washington has among the New Castle children 34% of the boys and 24% of the girls. Even McKinley has 7% of boys and 6.5% of the girls.

Whether German children love strangers less or acquaintances more our study does not show. But a comparative study of the "acquaintance" curves shows the same condition of things as above indicated:

The choice of father and mother is, age for age, from two to four times higher in Göttingen than in New Jersey. "Other relatives" and "other acquaintances" are about the same as

American. Germany is, indeed, the Father- (and mother-) land.

However we may account for the curves, it is clear that this curve goes with a condition of things with which we in America have no sympathy. Thus we get something that helps us toward a standard. If we do not yet know what is the best rate of expansion of the child's personality, we can at least see that as we approach the rate represented by these Göttingen curves we come to a condition of the narrowest sort of life, limited horizon, in short a personality wholly unfit for life in a Republic.

In Germany it is well enough—at least it fits a paternal government and is so logically the outcome of their educational system that the only inference is that they are getting what they want. As one teacher in Göttingen told the writer, "You see these girls will all be market women or shop girls and they only need enough arithmetic to enable them to make change."

The danger of a narrow utilitarianism is not that it does not provide for the livelihood of the individual, but that it does not provide for the expansion of his personality, the growth of his ideals, the complete development of his soul.

Surely we have not done our duty by the child, or by the state of which he will be a citizen, until we have brought him into contact with the greatest souls that have appeared among men. Not every child will be quickened by such contact, but as long as we cannot predict which one will be quickened, it is wise as well as just to give every one the opportunity.

Barnes (2) found 6% of boys and 8% of girls choosing writers —Longfellow leading. Among these Göttingen children six boys and two girls name Schiller; two boys and three girls name Goethe; Tacitus is named by one and Theodore Korner by two boys.

Little attention has been given as yet to fiction as a source of ideals, but the indications are that it is not important. Barnes (3) finds less than 2% of boys and a little over 2% of girls influenced by it (including myths and fairy stories).

In Göttingen Siegfried holds quite a place among the boys, and Dorothea—from Schiller's Hermann and Dorothea—among the girls. When these are taken out, there is very little left.

When the value of fiction comes to be investigated these facts must be taken into account. Considering the amount of fiction read, it furnishes surprisingly few ideals. Apparently there is a certain unreality about it all that makes children regard it as a mere plaything and not as something to be seriously imitated. Perhaps they are too near the time of their own imaginative stories to take stock in anything that is not more accurately dated than "once upon a time."

Whatever be the explanation, the fact remains and goes a long way toward convincing one that much time is wasted on the modern novel—especially by the young.

RELIGION.

Prussia prescribes three hours a week for two years and four hours a week for five years for instruction in religion. One of the chief motives in collecting the data for this study was the desire to see what influence this had on children's ideals.

In American studies Bible characters and Deity play a very small part in children's ideals. Public schools taboo the subject and there is nothing left but Sunday School and the home —both of which seem to be inadequate.

The following table gives the data on this subject from all the available studies:

TABLE II.

	God		Jesus		Bible Hero		Total	
	M	F	M	F	M	F	M	F
New Castle, Pa. (4)	—	—	—	—	—	.5	2.6	2.7
Minn. & California (1)	5						5	
New Jersey (3)	—	—	—	—	0	—	4	4
Edinburgh (4)	—	—	—	—	—	—	7	13
London (2)	—	—	7	14	—	4	7	18
J. Friedrichs' (5)	0	0	1	1	10	9	11	10
Göttingen	1–	1	4	7	2	7	7	15

The Table appears ragged because not all students have analyzed the data on this point; however, a glance at the totals shows that America stands by itself with its largest choice at 5% for God, Jesus and Bible heroes combined.

As we cross the Atlantic we jump at once to 7% with an upper limit of 18%. This difference accords with the difference in attention given to the subject in the schools so far as Europe and America are concerned. But when we analyze the European studies it does not go so smoothly. Friedrichs's study is based only on two classes aged 11 and 12, and is, therefore, of no use in comparison, since these may well be years of greatest interest in the subject.

London children devote half as much school time to the Bible as the German children, and yet they equal the choices of the boys and surpass those of the girls. Does this indicate that a half hour is better than an hour of religious instruction?

One gets the impression that this may be the case, after a visit to the recitation where the children get very restless before the hour is over; also from personal inquiries of the children, since they almost invariably answer that they do not like the *religion Stunde;* and from a statistical study, not yet published, on the study liked best and the one liked least. While religion is seldom mentioned as least liked, it is nevertheless almost never the best liked.

On the other hand, that the difference between London and Göttingen in this respect may be a difference in emphasis or method of instruction is perhaps indicated by the fact that the Göttingen study shows many more Bible heroes and fewer choices of Jesus. Indeed the German studies are unique in the number of Bible heroes. Friedrichs (5) gives 10% for boys and 9% for girls, while our own has 2% and 7%.

The following list gives the characters chosen and number of each:

BOYS.		GIRLS.	
David	6	Ruth	21
Abraham	4	Jonathan	16
Peter	2	David	8
John	1	Mary	3
Joseph	1	Hannah	1
Jacob	1	Moses	1
Samuel	1	Peter	1
		Samuel	1

In this connection it is interesting to note that in a study on these same children, of "What person do you most wish not to be like?" 20% of the boys and 15% of the girls name Satan or some character from the Bible, which seems to indicate that Bible characters are used more as warnings than as ideals. Taken together, these two studies surely indicate that the time given to study of religion is not without effect upon the ideals of German children.

OPPOSITE SEX CHOSEN.

Earl Barnes has called attention to the fact that girls choose male ideals to an extent that seems undesirable. German children do the same thing, though to a less extent. Whether they have more women to choose from it is difficult to say. They have their empress, queens, duchesses, etc., but they do not have the literary women, social reformers and college women that we have in America. A study of the curves and list of persons chosen may help us.

Here again, we note that the European curves are by themselves. The American curves are all higher and their trend is

Girls choose Male Ideals.

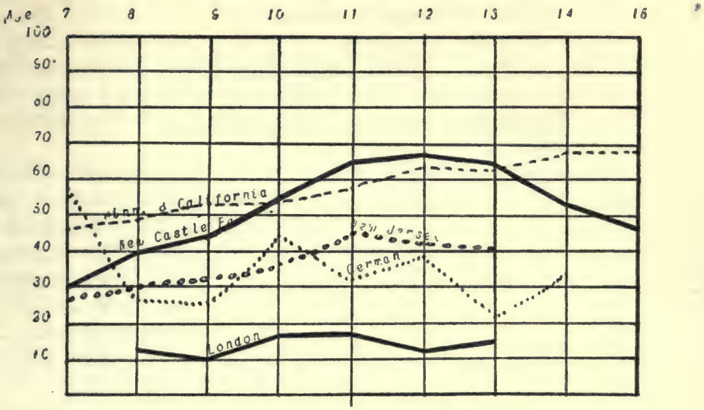

FIG. 3.

upward: the foreign curves are lower and the German one tends downward, while the English is down throughout.

An examination of the names of women that are chosen shows them in three groups as follows:

HISTORIC		BIBLE		MYTH OR FICTION	
Queen Louise	43	Ruth	21	Gudrun	2
Empress of Germany	38	Mary	3	Queen Griselda	1
Queen Elizabeth	1	Hannah	1	Krimhilde	1
Queen Henrietta	1			Princess Goldhair	1
Jungfrau von Orleans	2			Washfrau	1

Is it not significant that they find as many different persons among heroines of fiction as in history? It is encouraging that Queen Louise, the Empress, and Ruth head the list. But the vote ought to be much larger. Not enough women are available, and we do not lay stress enough on the womanly qualities of those that are available.

MITTELSCHULEN VERSUS VOLKSCHULEN.

Most valuable results could be obtained from a careful comparative study of these two schools. As the reader will remember, the Mittelschulen are attended by the children of parents who are able to pay some tuition but do not expect the University to be within their reach. The Volkschulen, on the other hand, are attended by those of the very poorest class, who cannot afford even ten dollars a year. In Göttingen the former are attended by the children of the small shop keepers, while the latter are attended by the children of the day laborers. The social differences and distinctions as well as the environment and general intellectual status are quite marked. The schools are adapted to their clientage.

Unfortunately our data are not extensive enough to allow of a satisfactory study. When we divide it into the two groups the number for each age is too small for us to draw sure conclusions. The data are approximately evenly divided between the two schools.

One of the most noticeable things in the comparison of these schools is the large percentage of Volkschule children that choose the Kaiser—19% of the boys and 16% of the girls as against 6% and 2% of the Mittelschule pupils. This seems to be quite in agreement with the well-known fact that the more immature the mind the more it is attracted by mere notoriety, pomp, parade, and show. With no disparagement of what the Emperor really is, he is little more than that to *these children.* The value of this state of affairs to the Emperor is clear.

More acquaintances are chosen in the Mittelschulen than in Volkschulen—in the ratio of 53% to 41%. This contradiction of what one should expect is probably due to the large vote for the Kaiser, who, while counted as a "public character," is so to speak both a public character and an acquaintance—his name being a "household word."

Foreign persons are chosen five times as often by Mittelschule as by Volkschule children. The higher group has the broader outlook. They have more history in their schools than is found in the lower schools.

Fiction is the same with the boys of the two schools, but Mittelschule girls choose three times as many ideals from fiction as do Volkschule girls.

The lower schools choose Bible heroes rather than Jesus in the ratio of 14:1. The upper choose Jesus instead of Bible heroes 12:2.

Twice as many Volkschule children fail to answer.

On the whole these facts conform pretty well to what one feels to be the difference between the two groups.

REASONS FOR CHOICE.

A tabulation of the reasons given for the choices gives the following result:

Sex differences are most noticeable in "material possessions" and "power to do things." Boys lead in both, the ratio being 14:5 in the former and 6:1 in the latter.

Comparing with other studies we find that Barnes's N. J. (3) study gives for "Material possessions" 7% and 2%: Chambers (4) gives 6% for boys and girls combined. Perhaps this higher percentage for Göttingen comes from the fact that these children being all from the poorer classes know more of the hard-

TABLE III.

Classification of Reasons with percentage of each age in the respective classes. Upper line boys; lower line girls.

Age		6	7	8	9	10	11	12	13	14	Total
No answer	B	—	31	3	0	3	4	5	3	0	6—
	G	17	2	6	13	0	13	5	0	0	6+
No reason	B	—	43	16	9	8	5	8	8	3	17
	G	52	30	15	1	4	0	2	5	0	15
Good and kind	B	—	16	34	31	30	16	13	6	9	20
	G	17	37	54	44	29	23	17	17	12	28
Material possessions	B	—	4	22	26	14	13	7	11	6	14
	G	5	9	12	7	4	2	5	0	1	5—
Qualities of character	B	—	4	16	17	32	34	40	43	60	30—
	G	0	9	7	22	44	57	65	63	74	43
Physical condition or appearance	B	—	2	6	9	8	12	9	1	8	7
	G	0	0	5	12	16	3	4	6	9	7
Intellectual or artistic	B	—	0	4	3	2	3	3	2	5	2
	G	0	0	1	1	3	2	2	2	3	2—
Power to do things	B	—	0	0	3	5	11	12	12	9	6
	G	9	13	0	0	0	0	0	0	0	1

ships that come from the want of money than do the average American children. Barnes's London study supports this view.

Power to do things is given by the N. J. children 17% and 12% by boys and girls respectively—an enormous increase over Göttingen. Personal appearance—7% of all cases—is double either Miss Darrah's (1), or Barnes's (3), and three times Chambers's (4).

"Qualities of character" in our study includes—in fact is largely made up of—bravery in war. In spite of this it is one-fourth lower than New Jersey.

"Intellectual and artistic" run as follows: N. J. 7%, New Castle, Pa., 5%, Göttingen 2%.

Here, again, we find that at every point this group is inferior to the average American group, as, indeed, we should expect it to be.

Inasmuch, then, as these figures give us the situation for a group of children of the crudest life and narrowest environment and the least efficiency as citizens, we certainly have established a lower limit which we must regard as the danger line for American ideals.

A comparison of Mittel- and Volkschule children shows only one thing sufficiently striking to be significant. The "intellectual and artistic" qualities are named practically entirely by Mittelschule pupils.

CONCLUSION.

1. This group of German peasant children suffers by comparison with the groups of American children studied. This difference may be accounted for partly perhaps by the conservatism characteristic of an old civilization, but more probably by the fact that we have a strictly class group, and that the lowest socially, with no mixture of children from the more cultured or well-to-do families such as characterize the American studies.

In either case the conclusion is inevitable that the curve of these children is at least the limit, and probably much lower than is desirable.

2. The instruction in religion in the schools has a noticeable effect upon the children's ideals, though perhaps not in proportion to the time devoted to it.

3. In spite of an environment in which empress, queens and duchesses figure, the German peasant girls choose male ideals to a very considerable extent, though in a decreasing ratio.

4. We need studies on boys from the gymnasium and girls from the Töchterschulen to give us the curves of groups at the other end of the social scale.

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4. CHAMBERS, WILL G. The Evolution of Ideals. *Ped. Sem.*, March, 1903, Vol. X, pp. 101-143.
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This last is a study of 344 children of the ages 11 and 12. It is not stated of what school or what kind of school. There are girls and boys, Protestants and Catholics. The material is analyzed with great minuteness and 22 tables given.

For a Bibliography of the general subject see No. 4.

SOME PHASES OF THE INTERNAL ORGANIZATION OF STATE NORMAL SCHOOLS.

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This is a study of state normal schools only, and does not include either city or county normal schools or departments of education in colleges and universities. The purpose of the study is to determine the attitude of the normal schools towards the work which differentiates them from other schools, and to take note of their internal administration as directed towards this work. This paper is based upon an analysis of the catalogues issued by those institutions as their declaration to the public of the work they do, and upon replies over the signatures of the principals to questions sent them regarding certain matters upon which the catalogues are silent. It must be said that the catalogues are silent upon several things concerning which the public would like to be informed. Many of these publications are issued without indexes; some have neither index nor table of contents, and a few normal schools issue no catalogue. The absence of an index makes it rather difficult to find the items desired, especially in those catalogues which lack logical arrangement of matter.

The total number of schools studied is 95. All of these state, in more or less general terms, what they conceive to be the function of a normal school. One of the clearest expositions of this function is found in the catalogue issued by the California State Normal, at San Francisco. The principal has further developed the idea in his report to the Trustees in June, 1903, and in a paper on "Factors in the Preparation of Teachers," read before the Association of California State Normal School Trustees, in April, 1905. The general tenor of all the definitions of the purpose of state normal schools is, that they exist for the making of teachers, and some of the catalogues set forth with a degree of explicitness what constitutes a teacher. In very few cases is a standard set up with sufficient exactness to serve as a measure of the man or woman who is to teach. In order to have a definite standard of measurement the writer of this article proposes five elements whose happy blending makes a teacher: (1) sound health, (2) *personality*, including character and culture, (3) some capacity for public leadership, (4) scholarship, (5) professional skill and technical knowledge.

The analysis of the catalogues reveals nine states (California, Indiana, Louisiana, Massachusetts, North Dakota, New York, Rhode Island, Texas, Wisconsin) in which health is one of the conditions of admission to the normal schools. Three states (Colorado, Tennessee, Washington) suggest health as highly desirable in those who would teach. A few others make general allusions to health as one of the teacher's assets. That health is not made one of the conditions of admission to all normal schools is doubtless not the fault of the schools but is due to a lack of appreciation on the part of the public of the necessity of guarding children against the dangers—physical and other—growing out of daily association with unhealthy teachers. A large majority of the normal schools, however, safeguard such health as their pupils have on entering and develop and strengthen it by physical training.

The element of personality, although the most important of all, and most necessary to the success of the teacher, is not susceptible of immediate test, and cannot be made an entrance requirement. The most that any normal school can do is to sift out the unfit personalities after a term of observation sufficiently long to enable the authorities to reach an approximately just judgment. It is evident that such a sifting of personalities as is here suggested is a very difficult and delicate matter, and must often result in a clash with public sentiment. Naturally, therefore, few schools undertake it with definite directness. The San Francisco state normal puts especial emphasis upon the element of personality, and carefully sifts its pupils with reference to it. The judgment of the faculty as to the personality of a pupil is reached usually within six months after the pupil enters, and if adverse the pupil is earnestly advised to withdraw, but is *not dismissed.* The value of the teacher's personality is strongly urged in Rhode Island, Washington, Wisconsin; somewhat less strongly in Colorado, Connecticut, Idaho, Massachusetts, Michigan, Minnesota, Montana, and North Dakota.

This question of personality is one of several points of frictional contact between normal school advocates and normal school critics. It is claimed by the latter that "the teacher is born and not made." Normal school advocates admit that the most successful teachers are born to be so—just as is true of the best blacksmiths, lawyers, or preachers—but they claim that none is so well born that some "making" will not be of great help. Let it be agreed, as a compromise, that the best teachers are both 'born' and 'made.' Neither the normal school nor the college is quite consistent in the practical application of its own view of this proposition, for, as shown above, few normal schools seem to pay any attention to the natural endowment (the *bornness*) of their pupils, while nearly all the colleges and universities have conceded the value of the making of teachers by establishing departments of pedagogy or education.

The greater number of normal schools, even if they do not sift their pupils on the basis of personality, do much excellent work for increasing the culture of the students. What may be called culture courses—courses of general lectures, concerts, seminars, etc.—are sustained by many, those of the western schools being especially excellent and varied. Capacity for public leadership is also a special endowment. A strong personality is essential to it, but there may be a strong personality without this capacity. Here, too, the best that the normal school can do is to select and cultivate. Forensic training—training in the power to "think on foot" and to deliver thought in good, clear English,—is perhaps the best possible means to the development of the capacity for public leadership. The normal schools at Tempe, Arizona; Peru, Nebraska; and Worcester, Massachusetts, make a special point of this forensic training. Perhaps other schools do similar work, but if so it is not featured in their catalogues. If it is done, its importance should secure for it especial prominence in the official publications of the schools. It is mentioned in some of the catalogues in connection with the literary societies; but it is surprising to note that some of even the best normal schools still cling to the mediævalism known as a "literary society." If forensic training is good, it should have as definite a place in the curriculum and be as subject to technical direction and instruction as is mathematics or chemistry. There is no reason why work in debating and other forms of public speaking should be left to the initiative of the students any more than the work in algebra is.

The question of scholarship—the fourth element of success in teaching named above—is another point of friction between the normal schools and their critics. The critics claim that the normal schools put too much stress, relatively at least, upon methods and not enough or none at all on scholarship. It is asserted that the normal schools should do no academic work, but should rigorously insist upon such an academic equipment at entrance as would enable them to confine themselves to professional work. A few schools (for example those at Providence, R. I., San Francisco, and some in Massachusetts and New York) methodize their academic subjects, teaching them only as incidental to the discussion of methods of teaching. The fingers of one hand are more than enough upon which to count the number of state normal schools that have the same entrance requirements as the state university. Almost all normal schools do academic work in some form, and affirm that it is necessary to do so for several reasons, of which the following are the most cogent: (1) the necessity of providing the rural schools with teachers who have had at least some modicum of training for their work makes it impracticable and unfair to demand even a high-school academic equipment as an entrance condition (and it is to be regretted that more normal schools do not take this position with firmness); (2) for good professional work in advanced courses high-school scholarship is inadequate, because a *reciting* knowledge of a subject is quite different from a *teaching* knowledge of it; (3) those who are to be teachers need a different kind of teaching from that done in high-school; (4) a teacher "will teach as he is taught rather than as he is taught to teach," and so the teacher must be taught by a professor of teaching rather than by merely a professor of the subject of instruction.

A number of normal schools seem to have been spurred by the criticism of normal school standards of scholarship to reach up into higher academic courses and subjects to the neglect of the most efficient work in the lower. They forget, apparently, that they are selling their birthright for less than a mess of pottage, if they shirk their duty to the rural schools and become oblivious of the fact that scholarship does not so much consist in knowledge of advanced subjects as *mastery* of the field in which one's work is to be done. The capacity of a school to do advanced academic work depends upon the scholarship of its faculty. Regarding this matter the catalogues are somewhat reticent. Only 23 schools out of the 95 from which catalogues were secured give the source of the degrees carried by the members of the faculty. The principals of 74 schools responded to a request for specific information, and from their replies the following percentages are derived:

An average of 51.6% of the faculties of these 74 schools are graduates of colleges or universities; an average of 49.5% are graduates of normal schools; an average of a little more than 19% are graduates of both normal schools and colleges or universities. A comparison of four states in which normal schools are carefully fostered is interesting as showing conformity to or divergence from these averages.

State.	College graduates.	Normal graduates.	Both.
Massachusetts (9 schools)	31 7/9%	56 16/27%	10 1/18%
Wisconsin (7 schools)	52 6/7%	57 1/7%	21 2/3%

State.	College graduates.	Normal graduates.	Both.
Missouri (3 schools)	52%	45 1/3%	21 2/3%
New York (9 schools)	54%	58 1/9%	31 1/2%

In a large majority of the schools, the higher academic branches are taught both by college and by normal graduates, although there seems to be a growing tendency to put the advanced subjects in charge of college and university graduates, while the professional work is, naturally, almost exclusively in the hands of normal graduates. Friction is almost certain to result from such an arrangement. College men without normal training are usually somewhat contemptuous of the professional work of the normal school, and this feeling is apt to be reciprocated by the normal graduate who has had no college training and who sees much poor teaching by college graduates. Furthermore, to contend that the normal school should give academic instruction of its own and then to put this instruction in charge of men and women who have never been students in a normal school is to abandon some of the strongest arguments for academic work in normal schools, and comes near to yielding the claim of the normal school's right to be. Consistency could be maintained and one occasion of friction in the faculty removed by placing upon the teaching staff only those who have had both collegiate or university and normal training.

Some test of the work which a school does or is estimated to do by the public which it serves is afforded by the kind of degrees it grants and by the recognition accorded to these degrees. From a study of the catalogues of the 95 schools under consideration it appears that 16 schools grant both collegiate and academic degrees. These are in Alabama, Missouri, New York (Albany), North Carolina, South Carolina, and Tennessee. Professional degrees only are granted by 8 states, Colorado, Idaho, Kansas, Michigan, Missouri, Montana, New Hampshire, Nebraska. The school at Edmond, Okla., grants the A. B. degree only, and that for post-graduate work. Of the 95 schools, 83 enjoy the privilege of recognition for their diplomas as state or county certificates. In some cases a normal school diploma is so recognized only after a period of successful teaching by the holder of it. In 6 states the diploma of the highest normal school is a certificate of admission to the state university (in Illinois, Washington, and Wisconsin to Junior; in Michigan and Minnesota to Sophomore, and in West Virginia to Freshman). Others have the work in certain courses or in certain subjects accepted by the state university *ad undem gradum*. It seems clear that so long as the state permits a normal school to do academic work it should be made the equal of similar work done by any other institution supported and controlled by the state.

Technical training, the fifth factor in the equipment of the teacher, is provided for in normal schools by their distinctively professional courses. These courses consist, in most cases, of a body of generally accepted facts in psychology, methodology, history of education, and educational economy, together with the theories supported by these facts; and a certain amount of practice-teaching the aim of which is to give skill.

All normal schools offer courses more or less full and complete on the theoretical, scientific side of the teacher's work. Very few are fully equipped for giving the pupil teacher practice in the art of teaching. A complete equipment for such work would consist of three distinct schools, each of which would serve a distinct purpose in giving the student a grasp of the art of teaching. These three schools would be, in the order named, (1) a model school, (2) a practice school, (3) an experimental school. The last of these only can rightly be called a "pedagogical laboratory." In the model school the student should be able to observe and study the best teaching that can be done by carefully selected experts. In the practice school the pupil teacher himself teaches and controls under expert direction. In the experimental school the professor of teaching and a carefully selected body of especially fit students should try to push the frontier of pedagogy a little further out. In this school new theories should be tested, old ones given a different application, and the conclusions carefully formulated and published. Upon this point it may be said, by way of suggestion, that there appears no sound reason why the experimental department of a state normal school should not have from the national government the franking privilege for its publications, precisely as the agricultural experiment stations in the several states now have. In this way even the remotest schools would get direct benefit from the experimental work of the state normal.

The normal schools studied make little or no distinction between a model and a practice school. Of the 95 whose catalogues are in hand, 89 have practice schools, and make successful service in them a prerequisite to graduation. But this requirement seems to be somewhat relaxed in several schools if the student makes an excellent record in his academic work. Any such relaxation of the requirement of good work in the practice school is, however, evidently a yielding of the fundamental principle of the normal school idea.

Some normal schools recognize the need of experimental schools and refer to their practice schools as "laboratories."

So far as can be determined from the catalogues, only two schools recognize their duty to the rural teachers in this regard, and provide *rural practice schools*. These two are the Indiana state normal school and the Monmouth, Oregon, state normal. This is a fact of such importance as to merit far more detailed mention in the catalogues of these schools than is given to it. Normal schools in West Virginia and Arizona have their students "visit" rural schools in the vicinity.

Some students of education are decidedly of the opinion that the state normal school should not attempt to prepare teachers for high school work. To deny the right of the normal school to fit teachers for secondary schools is again to deny its basic *raison d'etre*. Many normal schools offer courses amply strong on the academic side to equip men and women in the scholarship necessary for good high school teaching. But only 6 schools (of the 95 studied) offer *practice* work for high school teachers. These 6 are in Colorado, Illinois, Louisiana, Michigan, Nebraska, New York. About as many more have high school departments but seem to use them as "feeders" rather than as practice schools.

The distinctive professional work of the state normal schools focuses on the working out and application of their theory in the work of the model and practice schools. Between theory and practice there should be the closest and most vital correlation. Only 69 schools out of the 95 considered, however, give positive and unequivocal indications that this close correlation exists in their work. To make the connection most effective the teachers who teach the pedagogy of a subject should also teach the subject. So far as can be determined from the data at hand (catalogues and replies to questions) only 7 schools of the 95 have it thus. Doubtless others do also, but if so the fact is not communicated to the public.

The root difficulty with the state normal school as an institution is lack of proper support on the part of the state—using state in its truest sense as a social whole of self-governing people. Nor is lack of financial support meant, although this might well be improved. There is needed the support given by a hearty recognition of the full value which the normal school can be made to have. The major premise of the normal school syllogism has been established by law in practically every state. Further legislation should make the proposition a universal affirmative with a quantified predicate—which means simply that the state should require normal training of all its teachers. To require, for example, that after a certain date, set far enough ahead to work no hardship, every person not now a teacher must have had normal training before being allowed to teach, would strengthen and dignify the position and work of the normal school, and would profoundly influence the public schools. No American state has, so far, had the courage to carry out with logical strictness the normal school idea. As matters now stand, even in Massachusetts, which established normal schools in 1839, only 48% of the teachers in the public schools are normal graduates.

As one phase of the struggle against this lack of complete recognition, the normal school has had to compete with the "question book." So long as the state does not require normal training of all its teachers, and so long as examinations are as they are, and any bright young man or young woman can prepare for them by spending a few hours with a "question book," it is to be taken as high testimony to the devotion of those who teach that they spend hard-earned money in attendance upon a normal school. Evil conditions are made worse by the general and discouraging inability of the public to recognize and appreciate expert teaching.

But the normal schools themselves are not without blame for failing to occupy their field more fully—for being content merely to get teachers ready for class-room work. These schools should stand for the largest possible educational service to the state. For example, it seems axiomatic that the first duty of the state normal school is to the rural schools, since about two-thirds of the total school population of the country are in the rural schools. In many states the fraction is larger. But very few state normal schools make any provision whatever for the practical training of teachers in the art of organizing and directing a multi-graded country school, and this training the young country teacher needs far more than the training in methods of teaching arithmetic or geography.

Why does not some strong, well-equipped state normal offer courses for the efficient training of county superintendents, and superintendents for township and for village and city school systems? Here is a great opportunity. Also, now, when so many institute instructors are 'called' and so few 'chosen,' the normal school could render splendid service by training men and women for institute work.

A state normal school should serve as a clearing house for educational news and reports upon educational experimentation for the whole state. It should also do much extension work. This form of service is worked out to some extent in California, Colorado, Michigan, Missouri, North Dakota.

There are many excellent special features in some of the state normals studied, to describe which space is lacking. But mention must be made of the very superior training given by a few schools both in the use of a library and in administering it for the use of pupils. A particularly full and complete course of this sort is offered by the state normal at Emporia, Kansas. Good courses are sustained in library work in one or more of the state normal schools of California, Colorado, Indiana, Idaho, Michigan, Minnesota, Missouri, Washington, Wisconsin.

The writer has been deeply interested in the activities of normal schools as revealed by this study, and here expresses his great obligations to the schools for courtesies extended. The thought most convincingly suggested by the study was expressed by one of Germany's philosophers, and has been reasserted by the greatest English thinker:

"Erziehung ist das grösste Problem und das schwerste, was dem Menschen kann aufgegeben werden."—*Kant.*

"The subject which involves all other subjects, and therefore is the subject in which the education of every one should culminate, is the theory and practice of education."—*Spencer.*

REPORT OF THE COMMITTEE ON SCHOOL HYGIENE OF THE WORCESTER PUBLIC EDUCATIONAL ASSOCIATION.

Your committee has felt that its special function was to gather facts in regard to the practice of school hygiene in the cities of the United States with special regard to the best features proved desirable by practical experience. In the limits of a brief report it is impossible to cover the whole wide field of school hygiene, accordingly the committee has confined itself to a few important topics, as follows:

SCHOOLHOUSES.

The character of the school houses inthis country varies greatly. The best schoolhouses are almost ideal in sanitary construction and equipment and others defy hygienic laws in almost every respect. Investigations made in Boston, Buffalo, Philadelphia, Washington, Baltimore, and other cities, show that excellent school buildings are found in most of the large cities; but that many other schoolhouses are atrociously unsanitary. If it were possible to bring together the best features embodied in the different school buildings in different parts of the country, a model in almost every respect would result. This practical ideal, as we may call it, would embody among others the essential features mentioned in the following description.[1]

It is situated on a slight elevation. The soil is natural, free from organic impurities and well drained. No high buildings, noisy, dirty, or ill-smelling industries are near it. It is surrounded by large grounds containing a school garden, shade-trees, playgrounds, etc. The building is entirely of masonry and steel construction, built of the best glazed brick and practically fireproof. It is two stories high and built in the form of the letter H.

Heating and ventilation are by a combination of the so-called plenum and exhaust systems. Two hundred and fifty cubic feet of air space is provided for each pupil, and thirty-five cubic feet of fresh air suitably warmed and moistened is supplied each pupil per minute. Distribution of the warm air and ventilation are ensured by exhaust fans placed near the top of ventilating shafts, and the foul air is drawn from each apartment. The arrangement of the warm air registers and the foul air outlets in each room is made with regard to the best distribution of the fresh air, in the recitation rooms the inlets being placed eight feet above the floor, usually on an interior wall, and the outlets near the floor on the same side. The main horizontal duct for warm air extends under the whole of the assembly room, and fresh air is introduced by a register under each seat, while the outlets are at the top of the room.

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[1] Only those features are mentioned that are actually incorporated in some building. For more detailed account see The Ideal Schoolhouse, by Wm. H. Burnham, in the World's Work for June, 1901, pp. 866-871.

In the basement, besides the heating and ventilating apparatus, are storerooms, lunch room, playrooms, gymnasium, shower baths, toilet rooms, and ventilated lockers for the wraps of each pupil. The plumbing is all open, the sanitaries of the best modern style and ventilated through a special exhaust duct. The light in the classrooms comes from the left, or from the left and rear, and is regulated by curtains of neutral gray green running up from the bottom as well as letting down from the top. The ratio of window surface to floor surface is 1 to 4. All the exit doors open outward.

Especially noteworthy are the arrangements for cleanliness. The fresh air introduced to the heating apparatus is filtered through a screen of cheese cloth so that dust and other impurities are removed before it enters the fan room. The schoolrooms are really cleaned every day. There is no sweeping or dry dusting. The hardwood floors are cleaned every night by a carpet brush dipped in a special oil preparation. The oil makes the dust adhere to the brush, and in this way it is not stirred up, but removed from the room, and the floor is improved each time it is cleaned so that once a week it can be washed thoroughly without injury. Or the simpler and more practical method of using a small amount of kerosene oil with a so-called "dustless brush" is adopted. At intervals the rooms are disinfected. The furniture is wiped off with a moist cloth. The chalk dust is reduced to a minimum by the use of the best crayons and by cleaning the blackboards, and the little dust made is caught in removable troughs. Thus each morning the children come into a schoolroom actually clean. There are no free text-books used promiscuously, no slates, and no drinking cups; but on each floor is a drinking fountain where the children can drink from a continuous stream of water without the need of cups. Wire matting at the doors, individual lockers for wraps, and the facilities for bathing do much to insure clean clothing and clean children.

Some of the best features of this model schoolhouse are incorporated in the new high school building at Newport, R. I.

The building is in French Renaissance style; is built of brick with trimmings of gray granite; and is in the form of the letter H; and only three stories high, with unusually large windows.

"The feature of the interior plan is the arrangement of the rooms in suites. Three suites extend across the rear and front of every floor save the first, and consist of two classrooms and a recitation room between, with wide folding doorways connecting the three, so that in case of necessity one teacher might hear a class and supervise the study of two other classes at once."

While many of the essential features of an hygienic schoolhouse are found in Worcester, most of our schoolhouses are very deficient when compared with the recognized hygienic norms and are far inferior to the best schoolhouses in other leading cities, and no one of them presents an approximation to the ideal.

For a single example, most of our schoolhouses are deficient in light. An investigation reported by Supt. Lewis gives the facts concretely in regard to this defect. In his monthly report presented to the school committee, February 6, 1906, he says:

"I have caused measurements to be made in about two hundred of our rooms. In seventy-two of these the window space is less than $\frac{1}{10}$ of the floor surface. In other words they receive less than ½ of the light which they ought to receive. Only 42 of the 185 rooms measured meet the lower requirements of schoolhouse architects, *i. e.*, the window space at least $\frac{1}{6}$ of the floor surface. None of these rooms come up to the higher requirements, namely, that the window space should be not less than ¼ of the floor area. The worst condition was found at the Belmont Street building, where two rooms have a window space of only $\frac{1}{18}$ of the floor area. Moreover, the windows are in deep recesses in the French roof, so that the light admitted is probabably not more than $\frac{1}{5}$ of what is needed. This building has two other rooms, where the ratio between windows and floor is one to 14⅓, and eight where it is one to 12. The old building at Lamartine Street has four rooms where the ratio is one to 15, and eight in which it is one to ten."

Such facts emphasize the necessity of having all schoolhouse plans prepared by a commission of experts, as in Boston, or by other competent authority.

HEALTH INSPECTION.

The practice in regard to health inspection in the public schools and care for the hygiene of instruction and the like, varies greatly in different localities. Many of the large cities have medical inspection, usually under the supervision of the board of health. Some, like Boston, have daily inspection for the detection of contagious disease, others have periodic inspection, others little more than inspection in regard to vaccination, while some, like New York City and Cleveland, extend health inspection to matters relating to general physical condition and the like.

Specially interesting is the health inspection in New York City. "The Department of Health assigns physicians who inspect each school a certain number of times a week and exclude all children suffering from contagious disease. The work of these physicians is supplemented by trained nurses employed by the Department of Health who go to the homes of children suffering from tuberculosis or trachoma, and, where their services are required, show parents how to treat the children in accordance with the physician's directions. The schools in this way offer an excellent opportunity for detecting in their incipiency many cases of contagion.[1]

Specially helpful is the plan adopted of having trained nurses to look after the children, and in case of need to go to the homes. The work of such nurses is well illustrated by the report from New York City for the year 1904.

SUMMARY OF WORK PERFORMED BY SCHOOL NURSES DURING THE YEAR 1904.

No. of treatments to cases of pediculosis,	381,995
" " " " eye cases,	95,799
" " " " cases of scabies,	938
" " " " " " ringworm,	14,879
" " " " " " impetigo,	244
" " " " " " favus,	276
" " " " miscellaneous cases,	20,593
Total,	514,724
No. of visits to tenement houses,	19,524
" " " " schools,	16,155
" " " " miscellaneous,	607
Total,	36,286
No. of children treated,	26,069

"Medical Inspectors are not allowed to treat or to suggest treatment to any child who is, or who may be, under the care of a private physician. The nurses treat only those cases who, either through poverty or ignorance, on the part of the parents, would otherwise be neglected, and the Eye Hospital and Dispensaries care only for the same class of cases. The decision in the matter is left wholly with the parents. The rule as to non-treatment of any child able to employ a physician, is an absolute one, and infraction is dealt with summarily. On its part the Department has made it possible for the doctors of the city to treat a vast number of cases which would not otherwise have been brought to their attention, and it solicits the co-operation of the medical profession. Dates of treatments noted on school cards, and certificates of treatment of non-contagious physical defects, all are of very real help in the realization of the ideals in view."[1]

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[1] Personal letter from Supt. Wm. H. Maxwell, May 31, 1905.

The schools under the supervision of the Department of Health include: Public Schools, Children's Aid Society Schools, Kindergartens, Parochial Schools, and American Female Guardian Society Schools.

"On March 27, 1905, a plan of great importance was placed in operation. This work has been referred to but its scope is of such magnitude that it merits more detailed attention. The object is that of obtaining a complete physical examination of each school child, and in this work, perhaps more than in any other, the Department needs and solicits the co-operation of not only the laity but particularly the medical profession. In detail the method is as follows:

"Each child is examined to determine the following points: condition of nutrition, presence of enlarged glands, chorea, cardiac disease, pulmonary disease, skin disease, deformities of spine, chest or extremities, defective vision, defective hearing, deficient nasal breathing, defective teeth, deformed palate, hypertrophied tonsils, posterior nasal growths, deficient mentality, and finally whether, in the Inspector's opinion, treatment is necessary. An accurate record of the condition of each child is kept on a card specially arranged for this purpose and, in each case where any abnormality is discovered, a notice is sent to the parents informing them of the existing condition and advising that the child be immediately placed under medical care. The child reports later to the Inspector who ascertains if treatment has been instituted, if not, a nurse visits the parents and urges the need of immediate attention.

"From the inception of this work (March 27th, 1905) to the end of 1905, 55,332 children were examined with the following results:

TABLE OF PHYSICAL RECORD OF CHILDREN, MARCH 27TH TO DECEMBER 23RD, 1905.

Total number of children examined,	55,332
No. of cases of bad nutrition,	3,283

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[1] This and the following quotations are from the MS. of a recent lecture delivered by Dr. Darlington, Pres. of the Department.

No. of cases of diseased anterior cervical glands,	14,214
" " " " " posterior " "	3,047
" " " " chorea,	738
" " " " cardiac disease,	895
" " " " pulmonary disease,	600
" " " " skin disease,	989
" " " " deformity of spine,	485
" " " " " " chest,	401
" " " " " " extremeties,	498
" " " " defective vision,	16,394
" " " " " hearing	1,296
" " " " nasal breathing,	6,182
" " " " defective teeth,	18,182
" " " " deformed palate,	698
" " " " hypertrophied tonsils,	8,347
" " " " posterior nasal growths,	5,119
" " " " defective mentality,	1,210
" " " " where treatment was necessary,	33,351

One or two further illustrations will show the importance of health inspection.

DEFECTS AND CONTAGIOUS DISEASES.

Extensive investigations have shown certain significant facts in regard to the hygiene of young children, especially at the kindergarten and primary school age. It has been found that a large proportion of school children—one-third would, perhaps, be a conservative estimate—suffer from chronic diseases or have defects of sight, hearing, or the like. Every teacher meets these pupils and is handicapped in the work of teaching by their presence in the schoolroom.

These sense defects have been found to originate very largely in the early years of life. Defects of hearing are caused often by adenoid growths that come in the kindergarten or primary school period and are neglected. Defects of sight are probably in part due to over-stimulation of the undeveloped eye in these early years. Eighty per cent. or more of the children usually have been found to have defective teeth, and these result largely from neglect in the early years, many of the sixth-year molars being lost in the seventh year of life. Again, extensive studies indicate that over 90% of the deaths from contagious diseases such as diphtheria, scarlet fever, whooping cough, and measles, occur before the age of 10.

Contrary to popular opinion, there is great mortality from measles when this occurs in the early years of life and among the children of the poorer classes. Extensive statistics collected in the city of Munich showed that the mortality from this disease between the 2nd and 5th year, was 4.55%, while from the 6th to the 10th year it was only .04%. These figures would indicate that if an epidemic occurs in the kindergarten period, the deaths are likely to be 40 in 1,000; whereas if the epidemic can be postponed until the primary school period, only 4 in 1,000 will die.

Dr. Meder, in Germany, in a study of many thousand cases extending over a period of from 15 to 20 years, has found similar, although not as great, differences in the mortality from diphtheria, scarlet fever, and whooping cough, as well as measles, between the early and the later grades.

Again, at this early age the brain as well as the body is growing very rapidly, and some able students of hygiene maintain that the nervous disorders of later life are due largely to lack of development at this period of the fundamental nerve centres controlling the larger muscles of the body and functioning the larger and simpler movements.

When we consider further that it has been observed frequently, although no adequate statistics have been collected, that children who begin the conventional school work, reading, writing, and arithmetic, at the age of 8 or 10, stand just as well at the age of 16 or 17 as those who have begun at the usual earlier age, common sense as well as hygiene cannot ignore the following question: If school diseases and sense defects, that so seriously handicap the school work, occur in these early years, and if the conventional school work amounts to little or nothing, what is the use of attempting the formal instruction and neglecting health?

Such facts indicate that the whole character of education in the early years should be changed and the emphasis placed upon growth, health and the spontaneous motor activities, plays, simple manual occupations, voice drill and the like. If the child does not learn to read in these early years he may have another chance, but if he contracts a contagious disease he is liable to die. If he does not learn to write, he may have a better chance, but if he loses his sixth-year molars, new ones will never grow in place of them.

Thus modern studies demand that the emphasis in the kindergarten and early primary grades should be upon health and normal development; and as a child is often liable to be injured without parents or teachers observing it, as an adenoid, for example, is likely to be passed unobserved even by intelligent parents, as eye defects should be corrected, and as contagious disease must be detected in the early stages if epidemics are to be avoided, the necessity of competent health inspection is obvious.

Tuberculosis.

The general principles of hygiene, which apply to other places where tubercular disease is to be controlled and eradicated, apply equally to schools. Sunlight, fresh air and clean air, are the agents upon which we mainly rely in our efforts to prevent the growth and spread of tuberculosis. Sunlight is necessary because it destroys the tubercle bacillus. Fresh air is as essential as food to the nutrition of the body, and the well nourished body is not a good soil for the growth of disease germs. Clean air, that is dustless air, is essential also. Air impure from ordinary dust or other substances is a twofold source of danger. It irritates the upper air passages, producing a catarrhal inflammation whereby disease germs find soil better suited to their growth than is the healthy mucous membrane. Moreover, if the room is not properly cleaned and tubercle bacilli are deposited there, they form a part of the dust which flies about and may be breathed into the lungs of those who occupy it.

Therefore, schoolrooms should have a large amount of window space. They should be supplied with plenty of fresh air, and they should be properly cleaned so that the air shall not be dusty.

For the detection and proper control of tuberculosis in school children skilled medical inspection is necessary. Tuberculous infection of young children is common. But tuberculosis in children is likely to be insidious in its course and can be detected only by a trained observer. Tubercular infection of the bowels is far from uncommon in children, but the symptoms of this condition are not likely to attract the attention of the lay observer.

Again, many diseases of the joints and bones are tubercular and the symptoms they produce are obscure and may be misinterpreted. Thus pain really due to tubercular disease has often been ascribed to rheumatism or growing pains, so-called. The same is true of other ailments, either themselves tubercular, or caused by a tubercular process somewhere in the body. It is important that such cases be early recognized both for the welfare of the patients themselves and for the safety of others.

Probably most children afflicted with tubercular disease are unfit for school work and would be better off out of school. Some, however, may profitably engage in school work provided their work is adapted to their special disability. Most of the tubercular affections of children are what may be called confined. That is, the disease process has no external outlet and hence the infecting agent does not escape from the body. But children may have pulmonary tuberculosis, ordinary consumption, and so are liable to be a source of infection by their expectoration. Only a trained medical person can appreciate and act upon these various conditions.

Your committee can hardly emphasize too strongly the need of competent health inspection. On Feb. 12, of this year, the committee unanimously recommended the passage of the bill to provide for the Protection of the Health of Children in the Public Schools, now pending before the General Court. If, as seems probable, this bill passes, Worcester will be required to provide for medical inspection to the extent, at least, of testing the eyes and ears of all school children and periodic examinations for the detection of contagious diseases. It is necessary, however, that health inspection should go farther than this, and a plan like the New York system of general health inspection should be adopted.

Provision for such health inspection means, of course, increased expense, although this is not serious, but for any citizen who has children in the schools it would be hard to find a better investment. Without medical inspection parents often have to support the schools while their own children are excluded from them on account of disease, and few things are so expensive to a parent as illness in the family. The efficiency of such inspection in reducing the amount of disease is well shown by the statistics in New York City. The total number of children excluded from the schools on account of disease was, for 1903, the first year of adequate inspection of all children for contagious diseases, 65,294; for the year 1904, 25,369; for the year 1905, only 18,844. This great reduction in the number of cases of contagious disease during the three years is a sufficient argument for the wisdom of such an investment.

CLEANLINESS.

The best manner of cleaning schoolhouses is receiving much attention at the present day. The dust carries the bacteria, and the number of germs in the air is the scientific gauge of the degree of cleanliness. In all the large cities the janitors receive specific directions as to the manner and time of cleaning the woodwork, windows, floors and furniture of the schoolrooms. In Boston, once every ten weeks all floors are covered with sawdust wet with a solution of formaldehyde, which is swept up before it is dry, also twice every month door knobs and hand rails are washed with a solution of formaldehyde. The furniture is washed once a year with a solution of sulphonaphthol. In St. Louis the school buildings are thoroughly cleaned during the summer and winter vacations, including the woodwork, furniture, pupils' desks, windows and floors. In scrubbing the floors a 5% carbolic acid solution is used. There are also two other thorough cleansings of the schoolrooms during the year. The windows are washed on an average once a month. In New York, at least once in every week, the hand rails, banisters, doors and door knobs, are washed with a solution of washing soda and water. The janitors, in sweeping the floors, use oil sawdust. In Cincinnati the floors are swept every day, and all dusting must be completed one hour before the session begins in the A. M. All the dusting is done with a cloth. Feather dusters are not allowed.

In Milwaukee, the floors are swept by the Milwaukee Dustless Floor Brushes. They are brushes of stiff bristles. In the back of the brush there is a small reservoir into which kerosene oil is poured, which filters down into the bristles. This brush, instead of raising the dust into the air, collects it so that very little passes into the air during the sweeping process. The schoolrooms, cloakrooms, and halls are swept every day.

Gauged by the scientific test of the number of bacteria in the air, this method is vastly superior to those ordinarily applied. This was shown very emphatically by an investigation made by the Board of Health in Milwaukee a few years ago.[1] With the oil-brush practically no dust was raised in sweeping. In one schoolhouse, with the use of the kerosene oil-brush, the number of bacteria before sweeping was 5, which was increased to 20 immediately after sweeping. "In the case of the dry broom, the number increased from 10 to 1,165; in case of the sawdust with the broom, the increase was from none to 1,320, showing that as compared with the other two methods the kerosene oil-brush raised practically no dust." Where the brush had been constantly in use for over a year the number of germs both before and after sweeping was exceedingly small. With much the same conditions the average number per sq. ft., as shown by a culture in this school, was only 5 as compared with 218 per sq. ft. in another school where no oil had been used.

In nearly all of the large cities the schoolrooms are swept and dusted every day and the dusting must be finished at least one hour before school opens. The door knobs, doors and hand rails are washed once or twice a month with some disinfectant, and the school furniture is washed with soap and water and some disinfectant solution at least once a year, and in some cities twice or three times. Feather dusters are being abandoned, and cloths wrung out of water, or of oil and water, are now used for dusting.

In our own city the rooms are swept only twice a week, and in some of the schools the rooms are swept at noon and dusted just before the children come for the afternoon session. There are no directions to the janitors as to disinfecting door knobs, hand rails, or doors. The school furniture is not washed, and the windows are washed only twice in a year. No disinfectant is used, as a rule, in washing the floors, and with very few exceptions they are washed only twice a year. In the schoolrooms during the muddy season a continual cloud of dust is rising, which is kept in motion by the movements of the many pupils. Our janitors should be supplied with proper assistants, so that the schoolrooms may be kept in as healthful a condition as possible and that our pupils may not run the risk in attending our public schools of contracting diseases which might be prevented by proper attention to sanitary conditions.

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[1] See Annual Report of the Commissioner of Health of Milwaukee, April, 1902.

RECESSES.

Your committee has not attempted to cover the wide field of the hygiene of instruction, but it feels that the well recognized means of relieving the strain of school work should always be utilized. The conditions of a city school (sitting, eyes on book) conduce to a life far unlike the freedom of childhood. Digestion and circulation feel the change and reveal the fact in modifications or derangements of kidney and bowel habits.

The strain imposed by school on children has been appreciated to some degree, and a practical alleviation has been found in the recess period, prescribed in the schedule, in which the pupils are set free from school and resolvedinto bands of boys and girls. This relief is supplied on paper, but, as usual, there is a gap between plan and practice. Necessarily much must be left to the discretion of the Principals. Your committee has considered it an important matter to study the nature and occurrence of the recess period in the grades, to find to what degree it is affected by invasive influences, and to this end has secured the aid of scores of our teachers to collect records. The past winter was an open season, favorable to the recess, hence the showing will be at its best. It is hoped that this study (when completed) will contribute to an understanding of the hygienic conditions of school life.

AN URBAN EXAMPLE OF SCHOOL HYGIENE.

The city of Cleveland stands in the first rank as regards school hygiene. The following letter, June 7th, 1905, from Dr. Ehler, the Supervisor of Physical Training and Hygiene in that city, gives a brief description of what has been done:

"1. The Board of Health employs a District Physician for each ward in the city, a total of 26. Each of these physicians is supposed to visit each school in his district each day and to investigate the sanitary condition of the school, and to follow up all cases of ill health. Also the Department of Physical

Training includes supervision of school hygiene and sanitation. Each building is visited about once a month by the Special Teachers of Physical Training and reports are made by them concerning the hygienic and sanitary conditions of the building. Special attention is given to the question of heating and ventilation of all parts of the building.

"2. The buildings being planned at the present are believed to embody the very latest and most practicable ideas as to hygiene and sanitation. Of special note in this connection are the following:

"a. All new buildings are of fire-proof construction.

"b. Are heated and ventilated by a combination of the plenum and exhaust systems, having steam-driven fans for supplying the air and electric-driven for exhausting foul air. This is supplemented by a small amount of direct radiation under the windows of each room.

"The system is designed to supply 1,800 cubic feet of air per hour to each child in each classroom, and also to give an ample supply for playrooms, assembly room, halls, and toilets. The mechanical system of ventilation is now put in all buildings of eight rooms and over. Each room is supplied and vented independent of every other room. The fixtures for toilet rooms are of the very best iron enameled type of the highest design. All rooms have automatic regulation of temperature set at 70 degrees.

"c. As to lighting—the unilateral method is employed exclusively in elementary schools. d. School furniture now being put in is of the type designed by Dr. Cotton for the Boston schools. e. Schools in congested neighborhoods are being equipped with shower baths. f. Coatrooms are constructed so that coats and hats do not hang against the wall, and are supplied with steam heat near the floor under the hooks so that children's clothing may be thoroughly dried. Shelves of steel wire are provided for overshoes. These rooms have independent ventilation.

"In the administration of physical training special care is taken to provide frequent periods of relaxation. Physical training is conducted on every possible occasion outside the schoolroom, in the halls or assembly rooms, or out-of-doors whenever the weather permits. The exercises given are specially designed to promote organic vigor, and we have reason to believe, from reports that have been made, that there has been a decrease, on this account, of sickness among school children this year.

"4. As to the sanitary condition of the buildings, there is little fault to be found, as the Board of Education for several years has been keen to tear out defective sanitary apparatus and to keep buildings in a clean condition. To improve all our old buildings and put them on the highest plane from the standpoint of hygiene and sanitation, a bond issue of $300,000 has just been made. Most of this money will be spent in the improvement of the heating and ventilating apparatus of old buildings, all of which will be brought up to the standard of the new buildings. These old buildings will also be improved in the matter of lighting, sanitary fixtures, desks and seats, and playgrounds. Small playgrounds are being enlarged as rapidly as possible, particularly in congested districts. Over $30,000 has been spent for this purpose this year."

RÉSUMÉ.

The practice of school hygiene in the United States varies greatly in different localities. Among features specially commendable for safe-guarding the health of children are the following:

1. Daily medical inspection for the detection of contagious diseases in the early stages, a system employed in Boston, New York, Chicago, and many other cities.

2. The records of general physical condition, as in New York City; the special studies of children, as in Chicago; and the special tests of sight and hearing, as required by law in Connecticut.

3. The system of school nurses for taking charge of cases of disease, as in New York City and Baltimore.

4. Vacation schools and the like, as especially illustrated by the plan in New York City.

5. The requirement of play-grounds and the plan of having them on the roof of school buildings, as in New York City, when impossible to have them on the ground.

6. The provisions for cleanliness, especially the use of the kerosene oil brush, as in the schools in Milwaukee; and school baths in the poorer districts, as in Springfield; and the special devices for caring for the outside clothing of the children and the like.

7. The plenum and exhaust system of mechanical ventilation in the large schoolhouses; the systems of open plumbing, and the like.

8. In large schoolhouses, playrooms or gymasiums, individual ventilated lockers, and bathrooms in the basement, and an adequate assembly room on the first floor.

9. The provision in the new schoolhouses for a large amount of light, from one side only when possible, so that the eyes of the teacher as well as of the pupil may be protected; a ratio of window space to floor space of 1 to 4.

10. Adjustable individual seats and desks used in the best

schools, and blackboards low enough for the children to write upon comfortably.

11. The instruction of pupils in the essentials of physiology and hygiene.

RECOMMENDATIONS.

In view of the facts presented a few recommendations of things essential to the hygienic welfare of the schools in Worcester seem legitimate.

1. General health inspection by a system similar to that in New York City.

2. Care for the health and physical development of the children in the kindergarten and primary grades as the primary consideration, and special care to avoid contagious diseases.

3. The improvement of old schoolhouses so that they may conform to recognized hygienic norms.

4. The supplying of all schoolhouses hereafter built with adequate play grounds.

5. Suitable provision for cleanliness in all schools by the best methods, especially the use of oil in sweeping, and the prohibition of all dry sweeping and the use of the feather duster.

While these and several other improvements are greatly needed, your committee feels that perhaps the most pressing need is for competent and adequate health inspection.

Respectfully submitted,
WILLIAM H. BURNHAM, Ph. D.
MARY E. BARRELL, M. D.
FRANK DREW, Ph. D.
MICHAEL F. FALLON, M. D.
ALBERT C. GETCHELL, M. D.

WORCESTER, May 18, 1906.

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CHILD STUDY IN GREAT BRITAIN.

By **KATE STEVENS**, Secretary of the London Branch of the British Child Study Association.

The child study movement in Great Britain owes its inception and much of its progress to American psychology, since the inspiration which led to the founding of the British Child Study Association was given by Dr. G. Stanley Hall, and its progress in England has been greatly aided by the leadership and generous minded help of Professor Earl Barnes.

In connection with the International Congress of Education held at the World's Fair, at Chicago, in 1893, Great Britain was invited to send representatives and, in response, funds were raised and placed under the control of the Woman's Work Committee, presided over by H. R. H. the late Princess Christian. Under the auspices of this committee, eight women teachers were selected to represent the various phases of educational work in Great Britain and to report on the work of the Congress. Among the representative teachers were the late Miss Margaret A. Clapperton, from St. Georges College, Edinburgh, Miss Mary E. Crees, Head Mistress of the Montem St. Girls' School, London, and Miss Mary Louch, from the Ladies' College, Cheltenham. During the Congress Miss Clapperton and Miss Crees attended the Child Study section, and came under the inspiring and enlightening influence of Dr. G. Stanley Hall. Miss Louch, who had meanwhile been attending the section dealing with the training of teachers, was so impressed by hearing an address by Dr. Hall that she attended the Clark University summer school the following year from which she returned, to quote her own words, "with her mind teeming with new interests and with a new outlook on education." Immediately after her return to England she went to Edinburgh, where Miss Clapperton and Miss Crees were attending the Summer School. All three were so impressed with the need for child study and so enthusiastic in regard to it that they called a meeting, gained the sympathy and help of several prominent educators and, as a result of this meeting, the British Child Study Association was formed at Edinburgh, in August, 1894. Miss Clapperton took charge of the Edinburgh section and was also elected general Secretary, a post which she filled until failing health obliged her to resign in 1898. Miss Louch, who is at present general Secretary of the Association, with the help of Miss Beale, Principal of the Ladies' College at Cheltenham, initiated the Cheltenham Branch of the Society, became its Secretary, and actively promoted the work in that part of England until 1902, when she was succeeded by Miss Mary Chevallier, who still holds that office.

Miss Crees founded the London Branch of the Society, and was for three years its secretary, when the writer succeeded to that office, which she still holds. Other societies for child study were soon inaugurated at Newcastle, Derby, Manchester, Birmingham, Liverpool, and West Kent.

In 1898 the association, largely through the efforts of Mr. Henry Holman, H. M. I. and Dr. Langdon Downe, was placed on a constitutional basis. The affairs of the association are now managed through a central council composed of delegates sent from each constituent branch, thus securing unity of aim and centralization of results without interfering with diversity and adaptation of interests in each branch to its special environment. The official organ of the British Child Study Association is the Paidologist, founded in 1899 with Miss Louch as editor, a part which she ably filled for three years when ill-health obliged her to resign the work. It is now edited by Dr. Fletcher Beach in collaboration with Mr. T. G. Tibbey and Miss Sarah Young, of the Home and Colonial College.

A few details in regard to the London Branch, with which the writer is most closely connected, will serve to make clearer the aims and work of the association. This branch has been fortunate in securing distinguished educationalists as its presidents. Prof. James Sully was the first, and he has been succeeded in turn by Mr. Henry Holman, H. M., Inspector of the Board of Education, Dr. George Shuttleworth, Dr. Langdon Downe, Rev. J. O. Bevan, Dr. Fletcher Beach, Dr. Kimmins, Prof. Hewins, and Hon. Sir John Cockburn, Minister of Education, of South Australia, who still holds the office.

The method of work is to present each year a course of lectures by men and women recognized as authorities in the various phases of child life. For such lectures the Association is indebted to Prof. Lloyd Morgan, Sir James Crichton Browne, the distinguished alienist, Professor Earl Barnes, and recently to Dr. John Willis Slaughter, from Clark University. These lectures are free to members and open to others interested on payment of a small fee (6d).

Under the inspiration direct or indirect of Prof. Earl Barnes, to whom the Association owes a deep debt of gratitude for cooperation and support, as to Dr. Hall for the initial inspiration, a number of individual studies have been made, most of which have been published in Earl Barnes Studies in Education or the Paidologist, though a few have appeared in other periodicals. Studies made are as follows:

Barnes, Earl. Children's Ideals. *Ped. Sem.*, April, 1900, Vol. 7, pp. 3-12. Children's Sense of Property. Read before the Association May, '99. Children's Pets. Read before the Association May, 1900.

Cash, Miss K. G. Pets; a Side Study. Barnes Studies in Ed., Vol. 2, pp. 100-111. Study on Children's Sense of Truth. Barnes Studies in Ed., Vol. 2, pp. 308-313.

Crees, Miss Mary. Children's Occupations. Read before the Ass. Feb., 1900. Children's Ideas of War. Read before the Ass. Feb., 1901.

Cooke, Ebenezer. The A. B. C. of Drawing. An Inquiry into the Principles underlying Elementary Instruction in Drawing. Special Reports on Ed. Subjects, 1896-7, Vol. 1, pp. 115-156. Eyre & Spottiswoode.

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Circles or Round Tables for the study of special topics have also been instituted as a part of the work. Two of the most successful of these have been the one conducted by Mr. and Mrs. J. C. Hudson for parents and teachers, and that conducted by Miss Ethel Dixon and Miss James for those engaged in the study of defective children.

For the past year the London Branch of the Association has worked in co-operation with the Childhood Society, which was founded through the influence of Dr. Francis Warner as a result of the investigation of the committee for the Scientific Study of the Mental and Physical Conditions of Childhood with which Dr. Warner was connected. The report of this committee was based on the examination of one hundred thousand children. As both societies have similar aims and cover in many respects the same ground, it was felt that it would be a waste of energy and organization to continue two sets of meetings and lectures when both societies could be strengthened by co-operative work. Accordingly a joint committee, formed of delegates from the two societies, was appointed to arrange a programme. Through the efforts of Dr. Kimmins, while President of the London Branch, an active and generous co-operation on the part of the University Extension Board was brought about. A continuous three years course of lectures entitled "The Evolution of Mankind as seen in the Child and the Race" was arranged and is still in progress. The first year's course, given in 1904-1905, was in three divisions.

1. General Biology, by Dr. Chalmers Mitchell.
2. Anthropology, by Prof. Westermarck.
3. Animal Psychology, by Prof. Lloyd Morgan.

The second year's course, 1905-06, just completed, included:

1. The Physical Development of Childhood, by Miss Alice Ravenhill and Dr. Shrubsall.
2. Defective Children, by Dr. Kerr, Med. Officer of London County Council.
3. The Psychology of Infancy and Childhood, by Dr. Slaughter.

The third year's course as planned will consist of

1. The Psychology of Youth and Adolescence.
2. Educational Sociology.
3. Ethical and Moral Education.

In reviewing the progress made during the twelve years since the initiation of the movement, no rapid or phenomenal growth can be recorded. At first, the movement, when it did not meet with actual hostility was apt to be regarded by many as a fad, by more, it was treated with indifference, while a few saw in it great possibilities of reform in the more mechanical methods of dealing with the young. But while progress has been slow, it has been sure and the movement has gradually won the confidence and support of those in charge of educational affairs. The Association now numbers among its friends and adherents such men as Prof. J. J. Findlay, of Owens College, Manchester, Prof. John Adams, of London University, Prof. Lloyd Morgan, Prof. Muirhead, Dr. Chas. Myers, London

University, Prof. Sherrington, of Liverpool University, Sir Wm. Mather, Dr. F. S. Clouston, of Edinburgh, Dr. George Shuttleworth, Dr. Cecil Reddie, Head Master of Abbotsholme, Mr. Henry Holman, H. M. I., of the Board of Education, Hon. Sir John Cockburn, K. C. M. G., Minister of Education, South Australia, Prof. Patrick Geddes, Dr. Fletcher Beach, Dr. James Kerr, Dr. Kimmins, Chief Inspector of Ed. of London County Council and many others, Nor is its membership confined to Great Britain, for on its rolls are representatives from Russia, Denmark, Germany, India, and United States. The effect upon all those who have undertaken it seriously and systematically is to deepen and render more intelligent their interest in children. Through the lectures many teachers and pupils in training schools have become interested and this has resulted in a marked change of attitude toward children: the bad boy becomes a problem to be studied, a deeper insight into child nature is gained, the various stages of genetic development are beginning to be better understood. Analogies between the evolution of the child and the race are now recognized and, as an outcome of all this, there has come a greater definiteness of aim in the training of children together with a deepened respect for child nature and its undoubted rights and claims upon us.

On the side of physical development and training there has been a decided gain, as children who have hitherto been considered as hopelessly dull and stupid are now frequently found to be suffering from adenoids, eyestrain, defective hearing or some other physical defect which medical treatment can wholly remove or greatly ameliorate.

Again, there is invariably found to be an improvement in the relations of teacher and pupil, since the latter reacts to the interest and sympathy shown toward him, and also between the teacher and parents, consequent upon the interest shown in the child and his environment. No teacher who has ever earnestly studied her pupils, who has intelligently and sympathetically watched and guarded their development and sees the infinite possibilities of child nature, would ever go back to the old days of mechanical rote work, when the time of release from the monotonous drudgery of the schoolroom was eagerly awaited by both teacher and pupil. Educational conditions are steadily improving in Great Britain, and to the child study movement many of these improvements are directly or indirectly due, for with the increase of knowledge about children have come increased possibilities of meeting their needs, and training them for usefulness in the great social order in which even the humblest must bear his part.

IMPORTANCE OF COMPARATIVE PSYCHOLOGY FOR TEACHERS.

By Toshi-Yasu Kuma, Fellow in Clark University.

Comparative Psychology has come to stay. The works of Lloyd Morgan, Thorndike, Forel, Peckham, Yerkes, Lubbock, Small, Kinnaman and a few others have given to it the dignity of a science. The advent of this branch of psychology marks the latest and the highest stage in the development of the science of the mind. Comparative psychology is thus the newest branch in psychology. But it is at the same time the oldest. Or rather it is the newest because it is the oldest. This appears paradoxical but it really is not so. It is the newest in the order of development of different branches of psychology, but the oldest when considered from the standpoint of the material dealt with. In any study, the natural procedure is from the known to the unknown, or from things as they now are before our eyes to their obscure origins. Thus, in psychology, the start was made with a very practical side of the mind, beginning with the problems immediately connected with our practical life; and as the science developed and more came to be known of the mind, men became curious in regard to its origin and are now attempting to discuss it from an intelligent and scientific basis. Psychology in this last phase of development enters the realm of animal life. Here we deal with the oldest things in the psychic life, with the original stuff of the mind.

It is needless to say here that comparative psychology, like all other sciences, rests upon a fundamental assumption which it is difficult to prove. We have to assume that the mind in animals, as far as it goes, is like ours, that it operates under the same laws that govern our minds, and that it is revealed by objective manifestations as in men. Unless we grant this, we cannot talk of comparative psychology. There are some who think we have no right to make this assumption. Extremists in this camp go even so far as to say that nothing short of being animals themselves gives us any right to speak of their minds. But this assumption is, as shown by Lloyd Morgan,[1] as well as by Dr. Sanford,[2] necessary and justifiable from the scientific standpoint. What would become of human psychology, as anything but a solipsistic matter, if we were not justified in inferring from objective data the presence of minds like our own in other individuals? The possibility of human psychology as a science rests upon this assumption denied by some to comparative psychology. So long as psychology remains a science, the foundation of comparative psychology remains also secure.

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[1] Morgan, Lloyd C.: Introduction to Comparative Psychology, Chapter 3, pp. 36-39.

[2] Sanford, Edmund C.: The Psychic Life of Fishes. International Monthly, 1903, pp. 343-343.

The fact we mentioned at the outset, that comparative psychology brings us into contact with the original stuff of our minds, and that it marks the highest stage in the development of psychology, is a good excuse for its being. This is not, however, a mere theoretical justification, as might appear. There is a strong practical reason for its existence and for its vigorous study everywhere, and especially by teachers. In my opinion, there is no branch of psychology which is more helpful and important for teachers than comparative psychology in the laboratory.[1]

There are many reasons why comparative psychology is better than other branches of psychology for teachers. I wish to discuss briefly some of the most important of these. First of all here we deal with life as a whole, in contradistinction to human psychology, where the mind is studied piecemeal. When we study a monkey under certain given conditions we see before our eyes the actual reaction of a whole living organism, of a whole psychic complex; we see how instincts, emotions, and intelligence are brought together to bear upon the exigency of the situation. In other words, we find how a mind as a whole actually works when it faces a practical problem. This is vastly more valuable for teachers than the kind of psychology now commonly taught in normal schools, in which the mind is studied in different chapters, and nothing is said as to its practical working. What a teacher needs most is not the knowledge of the special mental process involved in the acquisition of knowledge, as is commonly believed, but is rather, in my opinion, the insight into the general working of the mind; not so much to know the elements of the mind as distinct factors as to be able to appreciate it as a living unit. Give him the skill to deal with the mind as a whole, his inability to analyze it into separate processes matters naught. This insight and this skill is to be cultivated, if at all, by psychological study, best of all by comparative psychology in the laboratory. Furthermore that infinite patience and sympathy which is indispensable to the success of the teacher can also be fostered by the study of animals. A rat or a chick will always act true to its nature and not as we sometimes expect. In this respect animals are just like children. The loss of patience or lack of sympathy not only makes the results of experiments questionable, but often actually makes the work impossible.[1] An ordinary beginner in the laboratory study of comparative psychology will ruin many animals before he gets any valuable results. But a few animals ruined in this way would indeed be well sacrificed for the good of children who might have to serve the teacher in their stead. Surely a teacher who cannot control himself before animals ought not to have any place in a schoolroom.

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[1] It has to be admitted, of course, that every branch has its own peculiar contribution to make towards the practical success of teachers.

The foregoing leads to another phase of the question, and that is the fact that the comparative study of psychology is the best method of introspection. Teachers must know how to introspect, or to know how their own minds act under a certain given condition. With ordinary teachers, however, it is rather a difficult task if not impossible. In their dealing with children they have a chance to see the effects of their attitude, words, and acts reflected in the reactions of children. But average teachers cannot properly evaluate the effects of their doing. They are too prone to find excuses for everything they do and to blame the children rather than themselves for everything wrong or undesirable. But let one deal with animals, and in a very short time he will find out how very impatient and how unsympathetic, and often how cruel and egoistic he is. Dumb animals act as their instincts prompt, and offer no excuses. Thus they do not provoke excuses on the part of the teacher. This creates a favorable attitude in the mind. He must persuade himself to face squarely the effect of his own act and candidly to examine himself.

In this connection we must remember, also, that in comparative psychology conditions are much better controlled than in human psychology. Mental reaction in animals is comparatively simple and the range of experience is narrow. Hence the possibility of its reactions is limited. So the chances of technical error are much smaller than in human psychology, where an infinite number of influences makes the control of conditions exceedingly difficult. This gives the former a decided advantage over the latter in bringing out the relation of the cause and effect in the psychic life in a definite and emphatic form. And this difference is important for teachers.

So far I have spoken of methods and conditions. How about the material itself? Here again we must speak in favor of comparative psychology for teachers. In this branch of psychology we deal mainly with instincts, rudimentary emotions, and intelligence, the latter mainly in the form of adaptive associations. These factors comprise the main portion of the every-day psychic activities of man. And in comparative psychology we study them in their original forms. This is important for teachers because the child is essentially a being of instincts and simple association mechanism. The higher mental structure, the problem with which the teacher is concerned, must be built upon this foundation. The important thing for teachers is to know that intelligence does not come out of nothing.[1] It must have its origin in instincts and simple associations, and it is important to know that instincts themselves are variable things, that they are adaptive,[2] and that animals with no more mental equipment than bare instincts can learn, even simple organisms like the protozoa showing an unmistakable sign of educability.[3] Thus a mere observation of the learning process in animals belonging to different stages of evolutionary development, both under controlled conditions and in their native habitat, constitutes a very important factor in comparative psychology for teachers.

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[1] To appreciate the amount of patience and sympathy needed in dealing with animals, one should read Bostock's excellent book, "The Training of Wild Animals."

This new branch of psychology, thus showing the gradual development of instincts and intelligence, gives proper perspective to the human psychology, and, above all, it gives dignity to the original psychic equipment of the child. One will come to believe that, from the standpoint of the teacher, emphasis must be laid, not on intellect or the superstructure, but rather on the instincts and simple associations which are the foundation. Give the child good, healthy instincts and his moral development will take care of itself. What is character making except training the child so that he may react properly in a given situation? And what assures this proper reaction except healthy instincts, richness of experiences or association material to give a wide range for the choice of action?[4] The possibility of deliberation, choice, and mental poise depends upon richness of association material. Education as building of character thus resolves itself into this, namely, the cultivation of healthy instincts and the enrichment of association material. Give the child all possible experiences and information. These serve him as a reserve fund upon which he can draw in cases of emergency. A resourceful man is a man with rich personal experiences as well as with a good store of information. When the child falls into a right reaction, effort should be made to make that reaction habitual and instinctive. This is hygienic as well as economical, mentally speaking. A man instinctively good and who cannot help doing good is infinitely superior to a man who does good things because he thinks they are good. A man with his lines of reaction made habitual may suffer from the limitation of his adaptive power; but this limitation will be easily counterbalanced by his experiences or association material ever increasingly enriched. Now comparative psychology shows us this original stuff of the mind, instincts, simple association mechanism, etc., in their pure forms. Herein lies its chief value for teachers.

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[1] Hobhouse, L. S.: Mind in Evolution. First five chapters.

[2] Porter, James P.: The Habits and Instincts of Spiders. Psy. Bulletin, Vol. 3, pp. 44-45. This paper will appear in full in the July number of the *Am. Jour. of Psy.*

[3] Hodge, C. F. and Aikins, H. A.: The Daily Life of a Protozoan. *Am. Jour. of Psy.*, Vol. 6, p. 7.

[4] Dr. Burnham says in one of his educational lectures that the habit of reaction along many lines is important and that the possibility of self control depends upon richness of experience.

An objection may be raised on this point by saying that this view tends to emphasize instincts and simple association processes unduly, and does not give due importance to intelligence. which being the last thing evolved in the mind must be the most important. We readily admit that intellect is the highest thing yet evolved in the mind; but we cannot agree that it is, therefore, the most important. Qualitatively it may be, but quantitatively surely it is not. Intellect independent of instincts and simple powers of association is as inconceivable as the existence of steam without heat and water. Tinkering with the intellect is not the best method of enriching our lives; we must plough deep into the subsoil of instincts and emotion. Will a perfect man, if ever such exist, be entirely intellect? We cannot conceive such a human being, however highly evolved. Christ, our ideal of perfect manhood, was far from being all intellect. His personality was teeming with instincts and emotions. The richness of his life, his perfect knowledge and supreme wisdom, were due to perfect correlation of these simple but very rich materials of the psychic life, and he never trifled with his own intellect.

So I conclude this brief discussion by repeating the assertion that no branch in psychology is more important for teachers than comparative psychology. I base this assertion on the fact that mere observation of animals teaching and imitating one another in their native habitat, or solving problems forced upon them in the laboratory, constitutes by itself a valuable lesson in pedagogy; that the study, having to deal with the fundamental elements of the mind in their pure and simple forms, enables one to understand and appreciate their nature and value, that it therefore makes one respect the native endowment of the child's mind, that it fosters patience and sympathy in dealing with "other minds than ours," that it gives one the insight and skill to deal with the mind as a whole, and that it gives all these indispensable lessons for successful teaching better than any other branch of psychology.

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These four journals, none of which are much more than two years old, together with Die Kinderfehler (Langensalza, 1896), now in its eleventh volume, Zeitschrift für Pädagogische Psychologie, Pathologie und Hygiene (Berlin 1899), and Zeitschrift für Schulgesundheitspflege (Hamburg, 1888) mark a very distinct new educational movement in Germany which is of the utmost importance and of which few Americans have realized the full significance. They are the dawn of a new day for education in the land to which so many look for the best and most progressive educational ideals. Each represents a movement directed by a group of active workers who are far more scientific, modern and progressive than the rank and file of teachers in that or any other land.

The first of the above journals, a quarterly, is the organ of a society devoted to experimental didactics. It is edited by Professor Meumann, an eminent experimental psychologist, who has just been called to the chair of Kant in the ancient University of Königsberg (which fact of itself brings out the striking contrast between the old and the new methods of studying the human mind and of developing youth), and by W. A. Lay, the well known author of Experimentelle Didaktik, published three years ago. The ideal is the gradual establishment of the practice of education upon a solid scientific basis. In one article [1] this journal breaks almost with violence away from the old philosophical pedagogy of Herbart and Ziller, which are declared obsolete and which must all be done over again from the bottom. Thus a sharp breach has been made with the venerable school of Diesterweg, which harks back to the past and regards all systematic observation and experiment in this field as only frills and affectations. In the first number it is admitted that this movement grew out of experimental psychology, that scientific pedagogy began with hygiene, fatigue, etc., which are still so fruitful themes. Another contribution came from insanity. The technique and economy of learning has been considerably developed for reading and writing, although some of these studies are made upon adults (*cf.* Müller, Steffen, Pentscheff, Zeitler, Erdmann and Dodge, Messner, etc.). Another source is child study in the narrow sense, such as child language, rapidity of work at different hours, the relation of different topics to fatigue. The tendency to separate pedagogical and psychological experimentation is now justified. The former is more often made upon groups or masses than individuals, and upon children rather than upon adults. It has already an imposing technique, and not a few interesting questions may be said to be already definitely settled. We have no space here to describe the many interesting researches already reported in the pages of this journal, but it is suggestive that there are now some half dozen pedagogical laboratories established in Europe, viz., at Zurich Antwerp, St. Petersburg and Budapest, and Milan. The first was under Meumann before he went to Königsberg, and the others are unde Schuyten, Netschajeff and Ranschburg and Pizzoli respectively. Didactic experimentation is an exact school of science controlled by tests and statistics. It even attacks so complex problems as the methods of teaching modern languages.

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[1] Sallwürk: The end of the Ziller school.

The second of the above journals, by Stern, is devoted to truth in observation and description of things and events. This will seem to those who do not reflect a rather barren theme. Nearly all the studies consist in looking at a picture, a landscape, seeing a mock fight, or observing carefully and systematically for a few seconds or minutes and then immediately describing precisely what was seen or done. The innumerable errors fall into certain groups which open rich vistas for the psychologist, and if ever there was a science of ignorance and error, here it is. Not only the object-lesson method, but the very nature of testimony, and the legal age at which a child can bear witness in court, are involved, as are the relations between empirical observation and injection from subjective sources. Although these tests are often performed upon adults, the most and the most fruitful by far are upon children, and it will strike American teachers with considerable surprise to realize that this mine itself is rich enough to justify a large journal devoted to it alone.

The third of the above periodicals. the Archiv, is by far the most voluminous. Like the others, it involves a new centre here for all those interested in the biology of ethnic differences and of society and social organizations. Many of these articles have no immediate relation to pedagogy, while not a few of them are directly upon it and others are more or less connected. Such problems as colonial training, degrees of relationship, illegitimate children, the family, the relation between ethics and evolution, evolution as a proper subject for school instruction, the relation between culture and the brain, the city and country children, methods of improving the race, anthropological measurements of children, the development of instinct, etc., will suggest the vast range of this new journal.

Eos is a quarterly devoted to the scientific study and treatment of abnormal children and youth. As every one knows, accidents of development and misgrowths of mind and body and arrests are nature's experiments to be utilized by man for science on the one hand, while the best methods of instructing all the unfortunate subnormals, blind, deaf, idiotic and only slightly backward children, are also treated and so far as possible reduced to their scientific basis.

These four journals, which show incidentally how far more specialized intellectual work is in Germany than in this country, are all closely related with child study, and threaten for the future the supremacy in that line which a few years ago was very readily and cheerfully accorded to this country. No one can take and read these journals, if he has no other contact with the frontier line of advancement in science, without feeling that much of our own pedagogy is in point of fact as belated and outgrown as some of these enthusiastic workers deem that of Herbart in the fatherland. G. S. H.

Let Youth but Know. A Plea for Reason in Education. By KAPPA. Methuen & Co., London, 1905. pp. 256.

This unknown author assumes, with Sir Joshua Fitch, that "education is a progressive science and at present in a very early stage of development." The undergraduate to whom the work is addressed is heavily loaded with dead knowledge. He has given him a treasure casket with no key to unlock it. His best years were portioned out between dead task work and ideal child's-play sports. He knew nothing of the political or spiritual history of his country, his school or his university. He was suffering from mental dyspepsia "as a result of the meal of chaff we serve out week after week; we collect it, we chop it up, we tie it up in packets; we spend hours in administering it in teaspoons and this is the end." Thus he characterizes the course of the English classical schools which takes in brisk, healthy boys of fair intelligence, and rather disposed to work, and sends them out young gentlemen who know nothing of the world about them, "can do nothing and are profoundly cynical about all intellectual things." The end of education is to realize the miracle of existence "in all the manifestations of the great Thaumaturge," which has flung immensity to us. Will the educators be able to justify themselves in the day of wrath? We should teach life lore. Every school should have a telescope. History should be made a romance and not a drill; so should religion, which is its outcome. Christianity is not simply a picturesque adventure of the human spirit. The average boy leaves the public schools a heathen. This is a calamity for his virtue, his efficiency and his happiness as well as a danger to the State.

We are now world citizens and we ought to have personal relations, sympathetic or sinister, toward the great characters of the present as well as of the past. Stimulus is far more important than exactness. Of course there must be some time deliberately set apart for drudgery. No language, at least save French, should be taught until a boy knows history or something else which makes him long for the contents which modern languages contain. The time from seven to thirteen should be divided between history and science, both of which should seek to awaken the imagination, arouse wonder and awe. At thirteen he should choose between them, and if he decides for history he will also decide for "its breath and finer spirit, literature." Grammar is a great fetich. For those who live on a plain and want to reach a hill there must of course be a road at the base. Higher up it will become a track, later a path, and higher up each must find or make his own way. Our pedagogues, however, want everything on a macadamized road. Translations are generally verbal chess playing. Heine says the Romans conquered the world because they did not have to learn Latin, the Esperanto of the middle ages. Classics do give a sort of suppleness and ingenuity, "which accounts for the number and excellence of our writers of elegantly playful verse." If we look at the classics in their true perspective we should be content with translations for prose where the matter is everything and the manner less, where we should read not slow but fast. We can feel a good prose writer's style, if we once know it in a good translation, almost as delightfully as in the original, but in poetry some vital essence is always lost by translations. Boys should not take wisdom on trust. They should read critically, but nothing to which their powers of criticism are wholly unequal.

In defense of athletics it is often said that they furnish good topics for discussion. Between seven and twelve a large part of a boy's work, now, alas, has to be sheer drudgery. The spirit of athletics favors bullying. Just as an electric current orders iron filings, so does an ethical spirit order the facts of nature and history. No period is so pregnant with momentous issues as the present. Boys appreciate keenly Leech's Comic History of England because they like to see its commonplaces made ridiculous. In Fredrika Bremer's novel, "Neighbors," two school-girls fight a duel in behalf of their heroes, Charles XII, and Peter the Great. To-day they would care for nothing but marks. True science is true religion or at least they are twin sisters, and their separation means the death of both. Science prospers exactly in proportion as it is religious and *vice versa*. The danger of our education is the development of a type. Boys with literary tastes ought to associate. The Duke of Wellington never used the phrase about Waterloos being won on the playgrounds of Eton. On the contrary, most great soldiers have been great leaders.

Poverty, by ROBERT HUNTER. The Macmillan Co., New York, 1905. pp. 382.

The chapters in this very important book are poverty, the pauper, the vagrant, the sick, the child, the immigrant. The city waif is incapable of sustained effort or care for the happiness of others and often has a perverted love of adventure. In many vicious districts home life has completely collapsed. Thus the children are brought up on the street. Most of their so-called petty crimes are, at first, only expressions of the spirit of adventure. If the city has any responsibility in this matter, then it can be justly accused of making thieves, and then punishing them. The children of immigrants pick up our ways and speech long before their parents do and therefore come to feel themselves far superior to their elders for whom they often act as interpreters and instructors. Hence parental advice is despised. If the child earns some pittance outside, then emancipation from home influence is all the more complete. The difference between industrial conditions on the country farm and in the crowded business and tenement regions of a great city is perhaps the most extreme change to which the race was ever called upon to suddenly adapt itself.

In view of the elemental need of space it is strange that the school buildings and yards in cities are closed from one-half to two-thirds of the time between eight in the morning and ten at night. This great social plant is owned by the people, but during most of the available time they are forbidden to use it. The school must no longer be a mere dispensary of standardized knowledge. This is not education in the modern sense. The school has not realized that the home is passing away and that the entire situation has changed. Despite play centres, crime is increasing. Parents are anxious to have their children taken care of, but the desire of throwing their duties upon the public must not be mistaken for love of education.

In our slum districts, where often there are children from a dozen races, speaking different tongues, in a single class, the children may be as unlike as Caliban and Prosper. Such conditions have made it hard to fulfill even the primary responsibility of the school and have made it all the harder to assume new ones.

In New York city 14 per cent. of all the children of eleven and twelve are not in the public schools, nor are over one-quarter of the children of thirteen and more than one-half of those of fourteen.

Now in a democracy the masses will control. We must make up our minds to increase the present cost of education ten-fold and to greatly increase the efficiency and expertness of present boards if we are to cope with all impending dangers. No child ever needed education more than the child in the modern city, or suffered more where mere learning is substituted for education.

"In the South there are now six times as many children at work as there were twenty years ago." We are easily aroused to protest against atrocities in other countries. Dickens's "Borough of Muggleton" had presented at various times 1,420 petitions against negro slavery and an equal number against any interference with its own factory system at home, perhaps worse than slavery. Mrs. Florence Kelly saw more than three hundred children working in the Chicago stock yard, "scores of them standing ankle-deep in blood and refuse," as they did the work of butchers.

Often the children displace the men and the younger children displace the older children. Wherever it exists child labor is one of the chief causes of the non-employment of adults. This, however, is more than destroying capital for it is eating up its very source. Such children drag out a life of unproductive or half productive manhood. They rarely earn living wages. Such employers, who exhaust the immature energies of childhood, are social parasites, enemies of all public and private weal. It is they who cause us to be threatened with a degenerate working class, exhausting humanity as a coal mine is exhausted. If, on the other hand, we are to attain the industrial supremacy which our early days promised, we must carefully educate the working classes. This destruction of little ones is not without kinship to cannibalism. It is hard to discuss child labor as an academic question. The worst of it is that as cities grow larger and land more costly, as homeless, yardless tenements multiply, the child problem is likely to grow more and more serious in the near future. Perhaps there is hope, however, in the present decentralizing movement which develops suburban tastes.

The Philippine Islands, by FRED W. ATKINSON. Ginn & Co., Boston, 1905. pp. 426.

Every one will be grateful to the first superintendent of education in the Philippines for putting down his impressions, experiences and knowledge, which as a point of departure will make a document of increasing value as time goes on. This work includes the general geography and history of the islands, climate, public health, commercial geography, the people, superstitions in religion, government in education. For ourselves we are especially grateful for, and interested in, the chapter on superstitions and religion which is a distinct contribution to our knowledge in some respects. We cannot but wish, however, that the author had enriched this chapter a little more by utilizing the growing, now rather copious anthropological literature of myth, custom and belief that bears upon this subject. The book is well written, the illustrations are interesting and many of them new even to those who have followed Philippine matters, and it is published in excellent style.

Primer, by SIDNEY C. NEWSOM and LEVONA PAYNE NEWSOM. pp. 127. First Reader, pp. 143. Second Reader, pp. 192. Third Reader, pp. 224. Language Lessons, pp. 208. Grammar, pp. 144. (Philippine English Series.) Ginn & Co., Boston, 1904.

Philippine pedagogy abounds in new problems, one of which is that of elementary text-books where the competition between rival publishers goes merrily on. One of the first series was by former division superintendent Gibbs, for the American Book Company. His primers and early readers were an original new departure in their abundant use of native pictures of flora, fauna, and people, with generous use of excellent colors. It was a very meritorious new departure, and the problems of adaptation were earnestly and ably grappled with. It was not realized by the earlier educators in the Philippines that they had any folklore that could be made of pedagogical value, if, indeed, they had any at all, and most of their customs were only to be eradicated and American ways and speech grafted on. Later came the Newsom series of elementary books for the Philippines. They were not only a little later but a little larger, thicker, heavier, and to our taste the pictures are better chosen and better in their execution and probably more numerous. This was natural, and ought to be, if the new series had any raison d'être. It marks a distinct progress in adaptation to indigenous life.

Best of all now comes a book of Philippine Folklore Stories, by John Maurice Miller (Ginn & Co., Boston, 1904, pp. 128). There is nothing to tell us who Mr. Miller is or where he got his stories—fourteen of them, or who drew his quaint and interesting pictures, but this booklet, which bears every mark of fidelity to the inner life of the natives, will interest every student of education. It marks a very important pedagogic step in advance. Those who read these tales, especially if they look over the few anthropological collections of Philippine customs and traditions, will realize that these people have not only a soul but the germs of an indigenous culture which should be carefully searched for, gathered and utilized for pedagogic purposes. It is already plain that there is material enough for a Hiawatha-like treatment which, if it could come soon enough to contribute to these people's respect for themselves and ours for them, would help us farther on the true highway of attempting to make them good Filipinos and not cheap imitations of the average American.

These three landmarks mark the true direction of progress. Several more steps will have to be taken, perhaps, before this race can develop its own Booker Washington or before we shall have the courage to grapple with the problem that Junod is developing in the Transvaal (described in the last *Ped. Sem.*, p. 133). Here the vernacular only is permitted in the lower school grades, and the readers and the curriculum are based upon the kaffir's own folklore and the history of his tribe. Arithmetic and geography are explained in his own tongue. In this way the younger generation do not learn to despise their parents or their race; they do not forget its feudal system or their own tongue; the course of study does not stamp out the native spirit, ideals and aspirations. There are quite a number of languages to be dealt with which teachers must study and know better but there is no English allowed until well up the grades, and it is realized that the masses must always live and move and have their being in their own environment.

American Men of Science. A Biographical Directory. Edited by J. McKeen Cattell. The Science Press, New York, 1906. pp. 364.

This is a kind of biographical dictionary of over four thousand American men of science. It is a work of enormous and painstaking labor to which the Carnegie Institute made a small but very inadequate contribution at the beginning, leaving it, as it has so often done with other special researches it has initiated, to shift for itself in the end. In general the list is confined to those who have undertaken research in natural and exact science, but some administrators, engineers, physicians, teachers, have been included because they have helped to advance science or, curiously enough, it is added, if none of these, "because they are found in the membership lists of certain national societies." Blanks were sent to about ten thousand people. The bold and unique feature of this book is that the editor has affixed a star to about a thousand of these names whose work is supposed to be most important. "In each of the twelve principal sciences the names were arranged in the order of merit by ten leading students of the science. The average positions and the probable errors were then calculated so that in each science the order of merit was determined with its validity. The names were then combined in one list by interpolation, the men in each science being taken approximately proportional to the total number of workers in that science." Chemistry leads with 175; then comes physics and zoölogy, 150 each; botany and geology, 100 each; mathematics, 80; pathology, 60; astronomy and psychology, 50; physiology, 40; anatomy, 25; anthropology, 20. "The star means that the subject of the biographical sketch is among the leading thousand students of science in the United States." Professor Cattell's object in determining the leading thousand American men of science was to secure a group for scientific study. He aims to secure data for a statistical examination of the conditions, performance, traits, etc., of a large group of men of science. One notices in looking over the work, as one sees in some university catalogues, a rather striking difference in the copiousness of the details concerning different names. Some eminent men have a few lines, and others, little known, perhaps half a column or more. The work as a whole must impress every American scholar as not only involving enormous labor and as being of great convenience, but of being, as it stands, of value and interest for every one who desires more knowledge of his contemporaries in his own and other fields.

Carnegie Institution of Washington. Year Book, No. 4, 1905. Published by the Institution, Washington, 1906. pp. 303.

These reports grow in interest, and the Carnegie Institution is to be congratulated on having at its head a very active man of science who is favorably known by his own researches and is heartily in sympathy with research. The Institution has not always had smooth sailing. One or two of the trustees, who are somewhat arbitrary and dogmatic and who are more skillful in political than they are productive in scientific work, sought, if not to control the Institution, at least to exert undue personal influence in assignments of work and to restrict the power of the president. Now, under new rules, the director is given more of the authority that he should have. The experience of the Institution so far does not seem to make any addition to its funds desirable. Its activities are far too large for the director or such a board, most of whom are perhaps the very best men who could be chosen, to direct in detail. It was inevitable that a few errors should be made in assigning the smaller funds. This and the very bigness of the Institution seems to have had a good deal to do with the new policy of rather wholesale dropping of small work and the encouragement of beginners in research and the adoption of a few large schemes which are much more easily supervised. While we have no criticism to offer for any of the great schemes, we think it deplorable and unnecessary that this magnificent Institution should have succeeded in drawing upon itself the resentment of so many of our all too few first-class men of science. The original scheme of subjecting all applications to an unknown referee in each specialty, the change of base from a policy of helping young men in our leading universities and then discriminating against them lest these institutions should become dependent upon the Carnegie Institution for help in research, the bestowal of small grants later withdrawn before the work was half finished, was unfortunate, but as we said above, some errors were perhaps most natural in launching such a great and radically new enterprise. One thing seems to us, however, unquestionable and only a dictate of obvious practical common sense, and that is that where a scientific man of mature years, of eminence, of admitted success in his work, applies for a small grant which he cannot get otherwise to help him out in a critical piece of research—such a man should not be humiliated by being turned down at the whim of some trustee who has a prejudice or because the director does not know who is who in that department. Could not this institution do something to win back the good will it has lost in some quarters by selecting perhaps not more than three or four of the most eminent men in each great department who should be assured that for the rest of their lives, if they needed small sums to a limited amount, for use in their own personal research, they should have it for the asking, and not be scrutinized or subjected to any tests? Supposing a really good man, like the late Professor Roland, of the Johns Hopkins, proposed an investigation of a new kind in a new field. Who is competent to pronounce judgment upon his plan in advance? Moreover, why should he be required to subject it to some unknown judge, perhaps a competitor or one who might profit by his suggestions himself? Truly original research cannot be pronounced on in advance by any one and the only possible ground is the scientific character and standing of the projector. The Carnegie Institution, we fear, has much yet to learn concerning the vastest culminating problem of science and education,—namely—how to make money most effective for discovery. It seems only a truism to insist that tried, successful, elderly investigators should not be humiliated and should be dealt with not in a cavalierly but in a helpful way. We have no disposition to criticise the Carnegie Institution. Its friends and even members are candid enough themselves to admit mistakes. Any specialist can point out in their publications and in their grants bestowals that have been very wise and some that have been very injudiciously bestowed. For our own part we hope that if Mr. Carnegie intends to give more for research, it will be given not to the whole field of science, which is far too vast for any man or board, though it were as numerous as a large university faculty, to wisely superintend, but to some special department or group of sciences which can be more readily overseen. His experience must already tell him that it requires incalculably vaster wisdom to spend ten million dollars wisely than it does to acquire it. It is no criticism of the present institution to say that no one connected has any knowledge of certain departments of research. The personality is too small, and the very eminence of the director himself in his own field assures to him any great specialist's ignorance of scientific domains far from his own. We think the present fund would be productive of more good if it had been divided into two equal funds, each for some group of departments, such as *e. g.*, the humanities and the physical section. Mr. Carnegie's friends will surely urge upon him the policy of giving whatever more he may bestow by gift or bequest for the progress of science upon an independent but limited field. Along the lines above indicated there is much more to be said which some one is sure to say at greater length.

Hearings before a Sub-committee of the Committee on Naval Affairs of the House of Representatives at the United States Naval Academy, Annapolis, Maryland, on the Subject of Hazing at the Naval Academy. Government Printing Office, Washington, 1906. pp. 452.

This voluminous report of the hearings of Mr. Vreeland's committee is of considerable pedagogical interest. Hazing of very many sorts prevails, some of which are of unusually cruel and humiliating type, such as standing on the head in a tub of water, sweating, so-called rating, sitting and eating under a table, performing menial services for older classmen, and doing all kinds of stunts. The testimony of the midshipmen, many of whom appeared, shows conclusively the immense difficulties in the way of suppression, and that even the authorities, when Congress is not investigating, wink at, if they do not positively approve it. The boys cling with all the tenacity of student custom to it, and I do not notice in reading the report that one, in answer to the oft-reiterated question whether now that it is forbidden and that they are convinced it is contrary to law, expressed the opinion that it will be permanently checked.

The Child First. A State's Trust. A City's Care. A report of the Juvenile Court of Salt Lake City, Utah. Published by the Juvenile Court Commission, Salt Lake City. pp. 78.

This is an interesting report by Willis Brown, judge of the juvenile court in Salt Lake City, who has won distinction in this work second only to that of Judge Lindsey, of Denver. Beginning to a large extent with an anti-cigarette crusade, Judge Brown, with great vigor and enthusiasm that appeals to boys, has made even those whom he condemns love him. The writer of this note was privileged to visit this court for a few days and to talk with a number of the juveniles brought before it. A good part of the success is due to the great tact and sympathy of Captain M. M. Woods and Mrs. W. M. Young, the probation officers. A home has been established where the boys are very comfortable and have liberty and respect their parole, and another important point is that the newspapers have agreed to keep out of the sessions of the court, so that no publicity is given to the names of those brought before it. If a minor is found drunk or has purchased a pistol, every effort is made to find out from whom they were bought and he is immediately summoned to court and either bound over or committed or warned as the case may be. The young culprit, if a small boy, is perhaps taken on the judge's knee and told to tell all about it. His parents are present and the interests of the child are studied. The majority are let off the first few times with only a reprimand.

Boyville. A History of Fifteen Years' Work Among Newsboys. By JOHN E. GUNCKEL. Published by The Toledo Newsboys' Association, Toledo, Ohio, 1905. pp. 219.

This is a record of personal experience and, perhaps, ought to be called notes by the way. The pledge and certificate is that the boy member "does not approve of swearing, lying, stealing, gambling, drinking intoxicating liquors or smoking cigarettes. There are many pathetic and heroic incidents recorded. As an illustration of the author's liberality and common sense, he tells a story of a boy reproved for swearing who replied that both his parents swore and insisted that he could swear all he wished. Gunckel had him rehearse the seven big swear words he knew, told the boy to go home and when his parents wanted something to try these swear words on them until they revoked their permission for him to use them. He tried the experiment, was soundly thrashed and sent back to take out a card and pledge. The boys are told that if they are in the habit of swearing they will often do it before they think but must not be worried, but experiment with themselves for a month before they sign any pledge.

Der Bau des Fixsternsystems mit besonderer Berücksichtigung der Photometrischen Resultate. Von HERMANN KOBOLD. Die Wissenchaft. Sammlung Naturwissenschaftlicher und mathematischer Monographien. Heft 11. Friedrich Vieweg und Sohn, Brunschweig, 1906. pp. 256.

The writer discusses at great length the formation of our stellar universe and concludes as follows: that together with gaseous nebulæ of very low temperature there are also bodies in a state of great condensation and of glowing heat. The order of these masses is neither uniform nor without rule, but they are crowded together in masses around certain centres of concentration. Here they are rather loosely connected with each other and arranged in the form of a great many-armed spiral. In the remoter parts of these spirals are found the hot and the gaseous stars, while those nearer the sun, which is usually not far from the centre of the spiral, are in their physical state more or less like it. Our sun is in a point of the milky way, the motions being in the chief plane of the whole spiral, a great number of the stars near by taking part in this motion. Among the stars are many groups with apparently common movement toward points of the milky way. The stars of each group are in one plane and their true movement, concerning the true character of which we are not yet well informed, occurs in this plane.

The Launching of a University and other Papers. A Sheaf of Remembrances. By Daniel Coit Gilman. Dodd, Mead & Co., New York, 1906. pp. 386.

Some years ago Dr. Gilman published an interesting volume of addresses entitled "University Problems." He now prints twenty-two more, nine of which are intimately connected with the history of the Johns Hopkins University, and which will constitute very important data for the future historian of that institution and of education in this country. The remainder are addresses on various occasions. No university president in this country has shown such sympathetic appreciation of both the educational value of science and of the methods of research and investigation. Happily the work and the story of President Gilman's life has become pretty familiar among educators of our country, but this volume is an addition of very great value.

A New Interpretation of Herbart's Psychology and Educational Theory through the Philosophy of Leibniz, by John Davidson. Wm. Blackwood & Sons, Edinburgh, 1906. pp. 191.

The key of Herbart, this author finds in Leibniz. His reals are like Leibniz monads, and the theory of feeling and will, desire and interest are found, at least in germ, in Leibniz. Although this work is by a well-known educator the writer has had a good philosophical training and the book will be quite as important, if not, indeed, more so, for the student of philosophy as for the teacher.

The Principles of Teaching based on Psychology, by Edward L. Thorndike. A. G. Seiler, New York, 1906. pp. 293.

The author's aim in this book is to make the study of teaching scientific and practical. The title of the chapters will give an idea of its scope. They are Physical Education; Instincts and Capacities; Apperception; Interests; Individual Differences; Attention; Association; Analysis; Reason; Conduct and Morals; Responses of Feelings; Motor Expression and Education; Formal Discipline, the Scientific Study of Teaching.

The School Arts Book, edited by Henry Turner Bailey. Vol. 4, Sept., 1904, June, 1905. The Davis Press, Worcester, Mass., pp. 701.

Mr. H. T. Bailey is one of the most progressive and enterprising teachers of art in this country. He loves beauty and loves the child, long since made a complete break from the old Prang system, and attempts in this series to gather up all the important and available elements that go to make up what a drawing teacher should know. He is sometimes criticised as not being entirely systematic but he is far better: he is all-sidedly suggestive and stimulating and that to a high degree.

Das Zukunftsprogramm unserer Schulgesetzgebung, von Franz J. von Rottenburg. Carl Georgi, Bonn, 1906. pp. 67.

The writer believes that we have not yet solved the question of moral and especially that of religious education. Before we can do so, he holds that we must have a general consensus concerning fundamentals by the different confessions, that we must take note of the lessons that come from the development of the religious consciousness of the race, that we must avoid dogma and appeal to the *Gemüth*, that in this way it is now possible to work out a course which will be very efficient in checking developments of immorality and irreligion in our schools.

L'Augmentation du Rendement de la Machine Humaine, par L. QUERTON. Instituts Solvay. Misch & Thron, 1905. pp. 216.

The writer discusses the influence of the environment on the development of man before school age, including such topics as pregnancy, birth, milk supply and sewage. During the scholastic period the topics treated are general education and the injurious and helpful factors in it. The third part deals with labor of adults, legislation, scale of pay, hours of work, professional hygiene, inspection, etc.

Méchanisme et Education des Mouvements, par GEORGES DEMENY. Felix Alcan, Paris, 1905. pp. 523.

We have here an elaborate and essentially new book, illustrated with nearly six hundred cuts and diagrams, which attempts to represent the graphological idea as carried out by Marrey. Beginning with the account of muscles and the skeleton, the author proceeds to analyze the movements of the different joints, the attitudes, educational movements, etc. Locomotion is studied with the kinematograph and dynamometer and we are told that it is often necessary to reconstruct habits of movements that are wasteful of energy. The mechanism of running and hopping have a chapter by themselves. Other sections or chapters are on walking on the hands, hanging and swinging, and finally the economic movements in marching, in dress parade, normal rhythm, etc., are dwelt upon.

Religionsgeschichtliche Volksbücher für die deutsche christliche Gegenwart. Herausgegeben von FRIEDRICH MICHAEL SCHIELE. Gebauer-Schwetschke, Halle a. Saale. I. Reihe, ⅔ Heft, 1904: *Jesus*, von W. BUFFET. pp. 103. V. Reihe, 1 Heft, 1905: *Welches ist die beste Religion?* von FRIEDRICH NIEBERGALL. pp. 76. V. Reihe, 2 Heft, 1905; *Die Wunder im neuen Testament*. pp. 72.

The five series of which these little volumes are examples represent an attempt to put in brief and popular form the results of scholarship in various departments of religious study. They are generally written by experts and together constitute a line of effort which has no parallel in English. Every trace of denominationalism is weeded out, and while the results of the higher criticism are apparent to those who can discern, so that there is nothing that can offend the intelligent and even scholarly reader, much stress is laid upon edification. The work, indeed, goes far to show that even if all the negative results in this field are accepted, there remains ample ground for edification.

Die Elemente der Erziehungs und Unterrichtslehre, von PAUL BARTH. Johann Ambrosius Barth, Leipzig, 1906. pp. 515.

Here we have another of the philosophical and psychological treatises on pedagogy so characteristic of Germany, although this time by a university professor. It begins with the usual Begriff, Ziel, etc., of education, and then takes up the education of the will, feelings, perception, attention, memory, judgment, the curriculum, etc. In the next part special topics are considered—religion, morals, history, etc.—to hand work. The method of the writer is to present under each topic a brief summary of the history of the methods of teaching the subject down to the present and it ends with some characterization of the more important recent, perhaps experimental, literature bearing upon the subject. It is far better than anything of the kind we have in English. One sees at a glance that the author has availed himself of most of the special sources on the different topics of which he treats. He is not unsympathetic to even Lay's experimental didactics.

Annual Report of the Board of Regents of the Smithsonian Institution, showing the Operations, Expenditures and Condition of the Institution for the year ending June 30, 1904. Report of the U. S. National Museum. Government Printing Office, Washington, 1906. pp. 780.

The main body of this interesting report is given to the history of American geology. It abounds with copious illustrations both of men and of their finds and has some brief discussion of a few present questions of interest in the field.

American History in Literature. Compiled by Martha A. L. Lane and Mabel Hill. Ginn & Co., Boston, 1905. pp. 178.

This attractive little booklet contains some seventy extracts, mostly from prominent authors from 1607 to the present time, illustrating important historic themes concerning the new world, new aims, colonial life, Revolution, the Union, the keeping of it, the Civil War, and the growth of the nation.

Laboratory Astronomy, by ROBERT W. WILLSON. Ginn & Co., Boston, 1905. pp. 189.

This is an interesting primer of technique and implies and seeks to develop a conception of fundamental facts and to help the student over initial difficulties. One interesting pedagogic feature of the book is that much of it can be worked with very simple apparatus. While primarily for teachers, it is also suitable for a text-book, although it is somewhat condensed. It is a valuable addition to the pedagogical literature of the subject.

A Course in Vertebrate Zoölogy. A guide to the Dissection and Comparative Study of Vertebrate Animals. By HENRY S. PRATT. Ginn & Co., Boston, 1905. pp. 299.

This supplements the author's Invertebrate Zoölogy, published some years ago. It is a guide to dissection of the important groups of vertebrates, each dissection complete in itself. The writer seeks to keep the morphological relations of various groups in mind. He usually selects a single individual as illustrative of its group, so that the book is essentially about the following animals: the dog, fish, perch, necturus, frog, turtle, pigeon and cat.

First Science Book. Physics and Chemistry. By LOTHROP D. HIGGINS. Ginn & Co., Boston, 1905. pp. 237.

This new introduction to science study has the merit of being a course in common phenomena. It is designed to precede the more systematic knowledge of the preparatory school and is based on experience. The illustrations are simple and well chosen and the style is clear and well adjusted to children. Beginning with matter, and energy, it treats of fluids, pressure, motion and force, heat, sound, light, electricity, gives an outline of chemical study and of common substances and processes.

The Palmer Cox Brownie Primer, arranged from Palmer Cox's Brownie Books, by MARY C. JUDD. Pictures by Palmer Cox. Grading and editing by Montrose J. Moses. The Century Co., New York, 1906. pp. 108.

This book is unique in that the illustrations, several on a page, are all of brownie life. Brownies stand for the numbers, they are going to school, lifting over the leaf of a book, robbing apples, dancing, sailing, walking on a tight rope, tumbling over an elephant, playing games, sawing wood, crowded in a sleigh, on a fence, in trees, on stepladders, riding on clouds, singing, flying around a windmill, etc.

Plant Breeding. Being Six Lectures upon the Amelioration of Domestic Plants. By L. H. BAILEY. 4th edition. The Macmillan Co., New York, 1906. pp. 483.

This eminent scientist has here attempted to make the garden interesting, describing the evolution of forms of plant life found in it, and seeking to interest teachers of horticulture as well as botany. The first lecture describes the fact and philosophy of variation; the second, crossing; the third tells how domestic varieties originate; the fourth summarizes recent investigations; the fifth describes current plant breeding practice; and the last lecture is on pollination or how to cross plants.

Congress of Arts aud Science. Universal Exposition, St. Louis, 1904. Edited by Howard J. Rogers. Vol. I. History of the Congress, by the Editor. Scientific plan of the Congress, by Professor Hugo Münsterberg. Philosophy and Mathematics. Houghton, Mifflin & Co., Boston, 1905. pp. 626. Vol. II. History of Politics and Economics. History of Law. History of Religion. 1906. pp. 661. Vol. III. History of Language. History of Literature. History of Art. 1906. pp. 680.

The authorities of the great international congress at St. Louis have advanced so far toward the fulfillment of their promise to print all the important papers in whole or in abstract given at this great congress. The delay in starting had led some to doubt whether these proceedings would ever see the light, and it is to be feared that as it is their sale will hardly be remunerative and that the publication will lead to still further loss on the part of the authorities of the exposition. Some of these papers were nothing less than epoch-making and we think there can be no question but that in their published form they will do even more to stimulate American learning than would the congress itself have done had the proceedings not been printed.

Pestalozzi and His Educational System, by HENRY BARNARD. C. W. Bardeen, Syracuse, N. Y., pp. 751.

As early as 1860 Dr. Henry Barnard published a book on Pestalozzi, and in his famous journal from time to time added more. Here all these publications are printed in one volume which is of great value to, and ought to be in the hands of, every student of education. While we might wish that the copious literary references it contains were not so antiquated but were brought down to the present time, we welcome, nevertheless, the commendable effort to reprint from the famous plates these extremely illuminating but somewhat scattered articles on the great Swiss pioneer.

Studies in English Syntax, by C. ALPHONSO SMITH. Ginn & Co., Boston, 1906. pp. 92.

The larger purpose of these essays is to instruct the reader in the structure of the English language, to show him the wide reach of syntactical problems and to discover and interpret by a scrutiny of all periods of language some of the natural laws that underlie its architecture. The author is one of the most successful and effective teachers of English language and literature in the South, where natural studies in English are better developed than in the northern colleges and universities.

Cloud Studies, by ARTHUR W. CLAYDEN. John Murray, London, 1905. pp. 184.

This charming book contains 61 full-page cloud photographs, the taking of which involves the overcoming of a number of rather grave technical difficulties. The author, in general, adopts the international system of cloud nomenclature; viz., (a) upper clouds, cirrus and cirro-stratus; (b) intermediate clouds, cirro-cumulus and alto-cumulus and alto-stratus; (c) lower clouds, strato-cumulus, nimbus; (d) clouds of diurnal ascending currents, cumulus and cumulo-nimbus; (e) high fogs, stratus.

La Lutte contre la Dégénérescence en Angleterre, par M. BOULENGER and N. ENSCH. Hygiène Scolaire. Instituts Solvay. Misch & Thron, Leipzig, 1995. pp. 97.

This little volume in an interesting series treats of the congress of Glasgow, medical inspection of schools, food for infants and various asylums for them.

West Africa, von MORITZ SCHANZ. Wilhelm Süsserott, Berlin, 1905. pp. 415.

In a previous volume the author had described briefly the history, mode of government and present status of all the African colonies on the east and south of that vast continent. He here supplements that volume by another in which he treats in the same way the colonies of the west coast. These include possessions of Portugal, Spain, France, England, Belgium and Holland.

Readings in European History, by JAMES HARVEY ROBINSON. Abridged edition. Ginn & Co., Boston, 1906. pp. 573.

This is a collection of extracts from the sources chosen, with the purpose of illustrating the progress of culture in western Europe since the German Invasions. The extracts begin with Seneca and Epictetus and end with a quotation from Hobson's lecture on imperialism. The range of topics is wide, including science, pure and applied, politics and social democracy and the Europe of to-day.

The False Entry and Other Stories, by C. W. BARDEEN. Syracuse, N. Y., 1905. pp. 244.

The author has here given us five new stories of teachers, illustrating school strivings, defeats, dishonesties, pretence, the good and bad qualities, and motives of a teacher's life.

Report of the Committee on Industrial Education in Schools for Rural Communities to the National Council of Education, July, 1905. pp. 97.

Report of the Committee on Taxation as Related to Public Education to the National Council of Education, July, 1905. pp. 87.

Report of the Committee on Salaries, Tenure, and Pensions of Public School Teachers in the United States to the National Council of Education, July, 1905. pp. 466. Published by the National Education Association, 1905.

Studies in the Scriptures. Series I. The Plan of the Ages. Bible and Tract Society, Allegheny, Pa., 1905. pp. 356+14.

Deutsche Liebe aus den Papieren eines Fremblings, von MAX MÜLLER. Edited by James Chapman Johnston. Ginn & Co., Boston, 1905. pp. 185.

Four German Comedies. Edited with notes, repetitional exercises and vocabulary, by Edward Manley and Philip Schuyler Allen. Ginn & Co., Boston, 1905. pp. 210.

Elementary Algebra, by C. A. WENTWORTH. Ginn & Co., Boston, 1906. pp. 421.

Greek Sculpture, Its Spirit and Principles, by EDMUND VON MACH. Ginn & Co., Boston, 1903. pp. 357. 40 plates.

Essays of Elia. First series. By CHARLES LAMB. Selected and edited with introduction and notes by Geo. Armstrong Wauchope. Ginn & Co., Boston, 1905. pp. 302.

Elementary French Composition, by JULES LAZARE. Ginn & Co., Boston. pp. 134.

A Series of French Readers, compiled by Jules Lazare. Ginn & Co., Boston. Lectures faciles pour les commencants, pp. 89. Premières lectures en prose et en vers; A new French Reader for elementary and intermediate classes. New edition, revised and enlarged. pp. 132. Contes et nouvelles des meilleurs auteurs contemporains. First series. pp. 132. Contes et nouvelles des meilleurs auteurs contemporains. Second series. p. 159.

A Student's Manual of a Laboratory Course in Physical Measurements, by WALLACE C. SABINE. Ginn & Co., Boston, 1906. pp. 97.

First Science Book. Physics and Chemistry. By LOTHROP D. HIGGINS. Ginn & Co., Boston. pp. 237.

Transactions and Proceedings of the National Association of State Universities of the United States of America. 1904. pp. 118.

Sesame and Lilies, by JOHN RUSKIN. With introduction and notes by Mrs. Lois G. Hufford. Ginn & Co., Boston, 1905. pp. 107.

DeQuincey's The English Mail Coach and Joan of Arc. Edited with introduction and notes by Milton Haight Turk. Ginn & Co., Boston. pp. 121.

L'Été de la Saint-Martin, par MEILHAC et HALÉVY. *La Lettre Chargée*, par EUGÈNE LABICHE. *Vent d'Ouest*, par ERNEST d'HERVILLY. With notes, vocabulary and exercises by Roy Temple House. Ginn & Co., Boston, 1905. pp. 137.

Intermediate French. Translation and Composition. Selected and arranged by Louis Curtis Jaques. Ginn & Co., Boston, 1906. pp. 139.

NOTE.

We have before us the programme for the first Congress for Child Study and for the Care of Youth, which is to be held early next October in Berlin, under the guidance of W. Münch, J. Trüper, W. Ament, Baginsky, Heubner, Rein, Ziehen and others. The committee, headed by Professor Münch, 22 Luitpold Strasse, Berlin, will be ready until March to receive propositions from any and all who desire to present papers. Although it is essentially a German congress, the participation of guests from other lands is hoped for. The plan is a broad and timely one and it is hoped that America will have a good representation here.

NOTE.

In Milwaukee a system of utilizing the Museum for public school instruction, which is worthy of notice, has been established. For some years public school classes had been taken taken to visit the museum but this was found to waste so much time and energy on the part of both teachers and pupils that in 1900 the present system, which has now passed the stage of experiment, was instituted by the Superintendent of Schools, H. O. Siefert. An arrangement was made with the museum directors by which a room was set apart for the use of public school classes and a museum lecturer, whose salary was paid by the school board, was appointed. A schedule was arranged by which every class above the third grade was assigned a definite day and hour during the year for a museum visit. Cases were provided in the schoolroom to which all objects not too large could be removed from the permanent cases for purposes of demonstration, the classes being conducted through the museum to see objects too large for removal. As the Milwaukee Museum is chiefly devoted to Natural History, the range of subjects is somewhat limited, but the museum visits have proved a valuable aid to nature study, physiology, geography and United States history. In physiology the skeletons have been used to give the children an idea of comparative anatomy and an unexpected amount of interest has been aroused. History has been made interesting through demonstration of the Indian relics and collections of utensils illustrating colonial life. As the museum has practically no exhibit for colonial life, various patriotic societies, especially the Daughters of the Revolution, have loaned many articles and have fitted up a part of the schoolroom to show the interior of a New England kitchen. Here the processes of spinning and weaving and the use fo the various utensils are actually shown and this department, which, at first, appeared least promising, has become one of the most interesting. The geographical lectures are, by the limitations imposed by the collections, restricted chiefly to anthropology and animals but there has been a marked increase of interest in these subjects and an increased call at the library for books on the countries studied.

Children from the schools for the blind and deaf have been given instruction and, in some cases, the adult blind have been invited to attend these lectures. A detailed account of this work, by Miss Merrill, the museum lecturer, may be found in the forthcoming number of Educational Work.

THEODATE L. SMITH.

NOTE ON PROGRESS IN CHILD STUDY IN EUROPEAN COUNTRIES.

Italy. From Italy comes, through Prof. Maestrini, a most encouraging report of progress and growing interest in child study among Italian educators. In an article entitled "Milestones" Prof. Maestrini notes the following events which have led up to development of genetic psychology in Italy. In 1871 Paola Mantegazza, the well known naturalist, psychologist and physiologist, founded in Florence the Society of Anthropology and Ethnology. This marked an epoch in the study of man in the broader sense, for it emphasized the need of the study of mankind in all his aspects, anatomical, physiological, psychological and social, in all climes and at all ages, and roused an interest in the study of children from a scientific point of view. In 1897 C. Melzi founded at Arona a Cabinet of pedagogical anthropology and, although two years later he was obliged to give up the work, its influence inspired others and later bore fruit in the work of Dr. Bari-Bruno, Marimò, Cabrini and Pastorello, all of whom opened small cabinets of anthropology, and in the studies of children, especially those of school age, carried out by Anfosso, Garbini, Guidi, Ferriani, Lombroso and Mosso. In the university, interest in child study has been diffused through Sergi, Ardigò, De Dominici and Fornelli.

In 1899 Dr. Ugo Pizzoli, after a work of preparation and organization occupying many years, founded his Laboratory of Experimental Pedagogy at Milan. This has been successful beyond expectation and in 1902, for the first time, the teachers of Italy were invited to attend a course of pedagogical lectures at Crevalcore. One hundred teachers from different parts of Italy were present, and through them the influence of the new methods, based on the study of the child, was spread throughout Italy, giving new life and interest to the schools.

In December, 1895, Prof. Vecchia inaugurated at the Sapienza di Roma a series of conferences on the Psychology of Childhood, to be held three times a week during the academic year. The purpose of this course was, to quote Prof. Vecchia's words, "to render less arduous some of the difficulties, and less easy some of the mistakes in the study and education of children."

The last year has greatly increased the list of Italian Educators enrolled as members of the Society for International Co-operation in Child Study and the University has received through Prof. Maestrini some valuable material collected from Italian sources. Among the names received at the University are included elementary and normal school directors, professors, doctors, teachers in all grades of schools, and specialists in the schools for deaf-mutes and for defective children, showing that the interest is wide-spread and that the importance of child study as fundamental to educational work of all grades is recognized.

Poland. Madame Grudzinska, of Poland, reports that in spite of political troubles, which have of necessity hindered progress, a child study association has this year been founded at Warsaw and that active work is being done. Madame Grudzinska has by personal effort collected and translated into English much valuable material for Clark University.

Austria Hungary. Letters have also been received from Dr. Kazimier Lutoslawski, of Zakopane, Austria Hungary, who is about to establish next year, in Poland, a school founded on child study lines. Though the unsettled state of affairs in Russia has prevented organized work, the work done in other countries is translated and read with interest, and excellent work is being done by individuals.

THEODATE L. SMITH.

BUTTRESS,

AS DEFINED BY SEVENTH GRADE PUPILS.

Butress—to intrude: Butrus—to button: Buttruce—rude in manner: Buttress—one who makes patterns: Buttriss—one who works in a buttry: Butress—a lady servant: Butress—one who butts: Buttress—one who buttons dresses: Buttress—a woman hired to wait on table: Buttress— to butt: Butress—a lady who does work similar to a buttler: Buttress—a sort of battling ram: Butteruss—buttonless: Buttressh—part of stairs: Buttress—one who puts on buttons: Buttress— one who interferes: Buttrus—the child is buttrus.

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THE PLACE OF NATURE STUDY, SCHOOL GARDENS, AND AGRICULTURE IN OUR SCHOOL SYSTEM.

By JAMES RALPH JEWELL, Ph. D.

Among all the innovations in the education of the past half century, none have been of greater importance nor of greater value to our schools and the people at large, than Nature Study, school gardens, and the inclusion of agriculture in the school curriculum. Nature Study is a part of the adopted course of study in a number of states and is so widely spread to-day that it hardly needs an apologist; school gardens may be found in almost every one of our larger cities, in many rural schools in Canada, and in an ever-increasing number of country districts in the Middle West; while, as a national movement, agriculture is making greater strides in our elementary schools than is either of the other subjects under consideration, and agricultural high schools are flourishing entities in Wisconsin, Minnesota, Alabama and California. Hence the value, educational and extra-academic, of these subjects merits consideration.

Europe is the home of school gardens, and there to-day they are found in greatest numbers; the United States saw the beginning of the Nature Study movement which has spread over this continent and through Australia, New Zealand, Tasmania, Holland, and into England, but it is in Canada, at present, that the two are most thoroughly inter-correlated, and where the best work is being accomplished with them. The Educational Departments of Manitoba, the Northwest Territories, British Columbia, Ontario, New Brunswick, and Nova Scotia all prescribe instruction in Nature Study for elementary pupils; and in Nova Scotia and British Columbia it is provided that "the pupil must study the plant, the animal, and the soil, themselves, other than book descriptions of them. He may only consult books after he has made his observations.'' About three years ago, when Sir William Macdonald established five consolidated rural schools in each of the five eastern provinces, there was included a garden at each school that ''should be used as a large slate, for the *use* of the scholar, where he might see his example before his eyes, and which might be rubbed clean again as soon as the lesson was learned and another came up.'' These gardens have now been made a part of the educational system of each of the provinces, and the establishment of others is being encouraged by liberal grants. Over a hundred rural schools in Nova Scotia have gardens, and the movement bids fair to become Dominion-wide.

The thing which, above all else, assures solidity to this movement in Canada, is that it has been recognized that such plans have failed elsewhere because of the lack of suitable teachers, and this is being met by providing training for teachers before there is even a great demand for them. In Nova Scotia the provincial normal school is affiliated with the agricultural college, and all students receive instruction in Nature Study, school gardening, and elementary agriculture. Macdonald Institute, at Guelph, Ontario, gives more thorough and better instruction in these lines than can be obtained anywhere else in the world, special attention being given to the correlation of the other school branches with them, and to the bringing out of their true educational value.

The manifold importance of Nature Study and school gardens is indicated by the impetus given it from so many sides, by the fact that the movement is being promoted by a large number of organizations with widely differing purposes to further their own aims and to solve the problems of special importance to them. Naturally, its friends are most numerous in educational fields. The Committee of Five of the N. E. A. on Industrial Education in Schools for Rural Communities, recommend gardens for every school, and that Nature Study should be taken up in the first grade of each primary school, and carried on until the elements of agriculture may take its place in the fifth grade. Nature Study leaflets for free distribution among the school children and teachers are published by the state universities or agricultural colleges of at least nine states ; the summer schools of the agricultural colleges of Nebraska, North Carolina, Connecticut, and possibly other states, offer courses for teachers, while such courses are given in Cornell, Hampton Institute, Tuskegee, all the state normal schools of Missouri and the District of Columbia, in most of those in Massachusetts, and in others in Connecticut, Vermont, California and Utah. Nature Study and gardening are compulsory in all of the Indian schools and are used as a means for teaching many of the other subjects of the curriculum, especially English. The market is becoming almost flooded with books on these subjects, and competent lecturers are in the greatest demand for teachers' institutes, summer schools, and Chautauquas. The movement has been under way long enough to have proved that it is no mere passing fad; its importance, then, attests to its value as a factor in education.

What may this value be? That must depend largely upon the use to which the garden is put, and upon the meaning assigned to the term "Nature Study," for the value of elementary biology and physics is a far cry from that of happy little picnics in the woods or sentimental talks and readings about plants and animals. Teaching the child *how* to raise plants and vegetables is of immense importance, but should be anything but paramount; the development of the child and not the technicalities of gardening is what must be sought in our schools. As to the material for Nature Study, there are those who say it makes but little difference what that may be, so long as the child is led to observe it closely; the aim of such teaching is difficult to perceive, and its educational value would be minimal. Nothing should be *shut out* of Nature Study which is in nature and which the child is naturally interested in ; something of astronomy, for example, ought to be given to the child, who is always a star-gazer, and whose first metaphysical speculations come when he is lying on his back in the blue grass or clover "just wondering." But on the other hand, nothing appeals so strongly to the child as does life, and its forces. His eternal question, "What makes it do so?" might almost be taken as the magnetic pole by which one may lay out the work to be followed. After pointing out that the purpose of Nature Study is "The learning of those things in Nature that are best worth knowing, to the end of doing those things that make life best worth living," Dr. C. F. Hodge in his "Nature Study and Life," goes on to show that the things best worth knowing, for this end, are fundamentally the relations of the individual toward nature and its forces, toward life in general, both animal and vegetable. Well taught and with this dynamic end kept constantly in view, Nature Study will produce the highest of all educational values : the proper response of the individual to his environment.

School gardens, in turn, give children the best possible means of giving expression to their thought through motor channels,—a thing which is essential to the motor-minded, and the educational importance of which for all children cannot be overestimated, for experimental pedagogy is showing us that representation is hardly second to perception in value. Schools in Philadelphia, Cleveland, Hampton and Boston report that children having the advantages of gardening do much better work in their other studies than do other children in the same school; and in Dayton, Ohio, where school gardens have been conducted for six or seven years, the increased efficiency of the former class of children over the latter is some thirty per cent. Perhaps the school garden, through its correlation with other school work, may aid in bringing our American teachers to work always for the natural and harmonious development of the child, rather than to teach a number of separate subjects as such; if it shall do this, it will become the greatest uplift to our education for many years. Moreover, it has the advantage over all other school work of making for the health of the children, especially in cases of incipient tuberculosis, and it is for this reason that the movement is endorsed by the New York Male Teachers' Association.

We have noted above that the value of the subjects under consideration is not educational only, and that the movement is fostered by organizations of many kinds. Nature Study and school gardens serve better than do other things to "cultivate the critical discernment of beauty and excellence in nature and in human nature," as President Eliot of Harvard has pointed out; and it is because of this that the American Civic Association has organized a department to carry on the propaganda essential to a wide acceptance of these subjects in our school system. Newspapers, city civic clubs, college settlements, seedsmen, and local agricultural and horticultural societies are supporting this movement in various places.

The ethical value of producing something cannot be overestimated; in this lies the only road to altruism open to the child, as well as a guarantee of his respect for the products of others. The selfish child or man is he who has fallen heir to his possessions, and it is only when he has obtained the products of his own toil that he looks about him for a worthy object upon which to bestow it. In a number of our large cities, some experience in raising plants, vegetables, and trees, has resulted in a wholesome respect for like property of others, both public and private; care, time, patience and money do not mean much to a child until they have become a part of his life. "Best of all the results of the gardens of our Cleveland school children, some few of the most troublesome boys have found their natural line of interest, and seem to be quite reformed." School gardens have quite transformed districts in the slums of New York and Philadelphia, morally, socially and æsthetically.

The child himself becomes a life-long economic force in nature, as soon as he learns to look at it with understanding eyes. All too few country boys know how the roots of corn spread, or what "smut" is; communities of boys, who before seemed the natural enemies of frogs and bumblebees, have come to conserve them upon learning their place in the economy of nature; the children of one school in Worcester, Mass., have almost wholly freed their end of the city from mosquitoes and malaria; by selection of seed, Minnesota school children have added to the wheat yield of large districts by a quarter. Any child would prefer an apple that is not wormy: let him learn the cause of wormy apples and you have a new force for good in the horticultural world, not to mention his changed attitude toward the birds of the neighborhood. The habit of looking the future squarely in the face, and preparing for it, is necessary to success in life; and it may be encouraged at a younger age by means of a dynamic Nature Study and by gardening than in any other way. Good eating apples appeal strongly to the child, but they cannot be secured unless precautions have been taken months beforehand,—and such examples are legion.

Important as are these subjects from an educational, ethical, and economic standpoint, their æsthetic value,—their effect on the sentiments of the child,—is overshadowed by none other. The country children may, and need to be, brought to appreciate the beauties spread all around them, the beauties which those from the city who are able, each summer pay large sums to enjoy. Prof. L. H. Bailey has pointed out that "even many country children too young to feel the appeal of more bushels of potatoes or more pounds of wool, have yet thus early formed their dislike for the farm. A flower garden and a pleasant yard would do more to content them with living on a farm than ten bushels more of wheat to the acre." In the city, Nature Study and gardening form the best vehicle for introducing the blessings which nature has supplied for mankind, but which paved streets, tenement houses and attendant conditions have denied to so many thousands who need them most of all. The psychological genesis of a genuine love of nature is the crowning result of Nature Study. The good teacher, moreover, will direct the religious feelings of the child to nature, with the certainty of appropriate response. There is nothing in nature which man has not worshipped, nor which primitive man to-day fails to worship: the stars, sun, moon, wind, clouds, water, rocks, flowers, trees, animals. President G. Stanley Hall urges that "The sentiments on which the highest religion rests are best trained in children on the noblest objects of nature." (*Vide* "Adolescence," Vol. II, pp. 144-232.)

Proud as we have reason to be of our agricultural colleges, we must confess that we are lagging far behind Japan and the countries of northern Europe in supplying formal instruction in agriculture in elementary and secondary schools. All the rural schools of France, Belgium and Denmark include this subject in their regular curriculum, while Norway, Sweden, Germany, Austria, Hungary, Finland, Switzerland and Holland support large numbers of agricultural schools of both primary and high school grades. The movement toward the maintenance of such schools in the United States is well under way, and is showing marked progress with every year. Agriculture is taught in all the rural schools of Nebraska, Wisconsin, Alabama and Illinois, and in nine-tenths of the counties of Missouri, while the teachers of Maine, North Carolina, South Carolina, and Tennessee, if not of other states as well, are obliged to pass an examination in this subject to obtain a certificate. The state boards of education of Indiana and New York are at present recasting their course of study, so as to include this work for the rural schools. Various county superintendents of schools over the Middle West, who felt it hardly feasible to introduce agriculture into the school curriculum at present, have organized Boys' Agricultural Clubs, the members of which compete in raising grains and vegetables—in Illinois, they have a corn judging contest as well—and at an annual fair in the autumn the exhibits are judged by professors from the state agricultural college, and awards made. By this means hundreds and thousands of children of Iowa, Illinois, Ohio, Texas, Kansas, and other neighboring states, have of themselves acquired a hunger for agricultural learning so insatiable that their teachers have been forced to take up the subject, in self defence, if for no other reason. In many cases, an annual visit of the club members to the agricultural college of their home or adjacent, state has been made, as one result of which many children have been made to aspire to, and to work for, a higher education than would have been the case otherwise.

There are some few primary schools in the United States in which the basal instruction is agricultural, where the boys are taught, young as they are, to become practically self-supporting and so independent, but without formal education being neglected; schools very like the famous Abbotsholme in England, in that their one purpose is to "train up MEN," as M. Demolins puts it in his book on Anglo-Saxon Superiority. Almost without exception, however, they are Farm Schools for indigent boys, or for waifs not yet vicious but who have been committed for vagrancy. Best of all these schools, and a veritable object lesson in what education ought to be, is the Boston Farm School, on Thompson's Island, in Boston harbor. The only fault one can find with the institution is that only indigent boys are admitted,—no indulgent father could buy its advantages for his son with any amount of money. A number of analogous institutions might be mentioned, but space remains for but one: the Berkshire Industrial Farm, of Canaan Four Corners, N. Y. It is worthy of note that this school is for "unruly, vagrant and vicious boys," for just those who are shut out of other schools. Manual training along other than agricultural lines is taught, but Supt. Mayo has not found so good effects from any other line of teaching as from agriculture, and from teaching the boys to make an honest living for themselves, out of doors, and in the country. During its history of over twenty years, only a negligible per cent. of its boys have failed to be transformed into good men and good citizens.

A catalogue of our secondary agricultural schools does not consume much space. Here must be reckoned the 16 land-grant schools for colored people, in the South, for only about four per cent. of their students are seeking the bachelor's degree. Alabama supports one agricultural high school for whites in each congressional district. Wisconsin has two county high schools of agriculture, manual training and domestic science, and has lately appropriated funds for two more; California has a state secondary school of this kind at San Luis Obispo; and Nebraska, Maine, Rhode Island and Washington have followed the lead of Minnesota in establishing secondary schools of agriculture in connection with their agricultural colleges. Something over half a dozen private secondary schools give more or less thorough courses in agriculture and horticulture. The government has established an Indian school of this class at Chilocco, Oklahoma, where hundreds of boys and girls from the elementary Indian schools can be accommodated and taught scientific farming.

Meagre as this agricultural instruction has been, its results have been enormous. Take the work of Hampton Institute, Tuskegee, and the land-grant schools for colored students, as an example. In every southern state, graduates of these institutions are conducting small industrial schools, which pay special attention to agriculture, each forming a centre of progress for the negro. During the last 25 years, more than 70% of the negro farmers of the 33 counties of tidewater Virginia, have come to own and to manage their own land. These schools have been sending out missionaries, not to preach an emotional religion through the medium of "revivals," but to preach the gospel of work, of land-owning, and of scientific agriculture. Every other race has had to dig its civilization from the soil; perhaps the negro will be obliged to do likewise, especially since he is being driven out of the mechanical trades by the spread of trades unionism. But cotton and tobacco are his staple crops, to such an extent that in thousands of cases he fails to raise any kitchen vegetables for his own use. Diversified farming would keep him from loafing half the year, and scientific farming taught to every colored boy and girl would do more to raise the race economically, and hence ethically and socially, than will all the classical education that can be furnished. The same thing is true of the Indian,—agriculture taught to every pupil in the elementary schools of the Indian service has done more to bring the race up to the standard of American citizenship than has any other one factor.

That an agricultural education is of as great value for the children of our own rural schools, is proved by the continuous spread of such instruction and of the facilities for giving it properly. Although half of the school children of the United States receive all of their instruction in the country schools, they are educated away from, rather than up to, their life work. The introduction of agriculture in the elementary schools, especially where it has been made to furnish the subject matter for other of the school studies, has aroused a wholesome interest in the whole of the school work such as has never before been seen. Many of the children attending the agricultural high schools would never have gone to another secondary school because of lack of interest. Perhaps the greatest commendation these schools have received, is that the farmers of the surrounding regions call them "*our* schools."

Serious objections have been raised in several states to the Wisconsin plan of one agricultural high school to a county, because of a belief that the existing system of public high schools should not be paralleled by schools more or less technical; that "it is wrong to set agricultural instruction off by itself, and to make it only a class subject." It seems only a question of time, however, until agriculture shall be a common feature of our educational system, higher and lower alike. But the present need for secondary instruction of this kind is imperative, and if it is to be met before the establishment of county agricultural high schools seems feasible, there confront us but two possibilities: the introduction of the subject into all our public high schools, or, the practical abolishment of entrance requirements to the agricultural college. Lack of trained teachers makes the former out of the question for the present; hence it seems that the latter course should be followed. This does not mean in the least a lowering of a standard for a degree, or, better, for graduation. Happily, there is an instance in point to serve as an example. Just as the Missouri agricultural college doubled its number of students by raising the entrance requirements to a level of those of the college of arts and sciences, so, on the other hand, Illinois in six years increased the attendance from 20 to 340 by providing a large faculty, competent in every way, and then saying to the farmer boys of the state, "Come to the University, as you are, and choose the subjects you wish to study. We teach about 80 agricultural subjects, elect what you feel you need, and we 'll do the best we can to teach them to you. Of course, if you choose certain subjects, you must take certain others with them, because they belong together." And the boys go to college without very much thought of the degree, but rather to learn those things they have found they needed to make them successful farmers.

No serious student of our American system of education would defend the conditions in our rural schools to-day, as being the best to prepare the pupils for successful, happy lives, or for the highest citizenship. Many reforms would be necessary to supply adequate educational facilities to the pupils of our rural schools,—nearly one-half the school children of the country. More than nine-tenths of the country school children never attend a graded school. Whose is the fault, we need not stop to inquire; but not only do these children have the right to demand better training, the Nation has the right to demand better citizens than is possible under the present conditions. In some parts of the South, if not in most of the southern states, the condition of the people forbids sufficient local taxes being levied to support good schools; but, in many parts of the country, the educational ideals of the people of well-to-do sections must be lifted. In the Middle West, for instance, the indifference towards education seems best met by showing the people the financial advantages to be secured through scientific agriculture. There are not a few examples of counties—indeed, of states—where the farmers are now leaders in the demand for a better and higher education; more bushels of wheat, corn and potatoes to the acre have accomplished what the continued pleading of school men failed to do.

Our first schools were for the express purpose of training young men for the ministry; and from the very foundation of the United States the curriculum of our elementary schools has been tailor-made, according to fashions prescribed by the classical colleges. The conservatism which has cut out a course of study to fit the five per cent. of the elementary scholars who go on into high school, and which forces the remaining ninety-five per cent. to wear a misfit or to go without intellectual clothing, is scarcely worthy of our progressive spirit along other lines. Instruction in agriculture would force none of the present subjects out of the rural schools (although its introduction might be justifiable even if it did), for several of the subjects could profitably be pruned down perhaps a quarter, as Dr. McMurray has shown. Indeed, most of our text-books to-day are manufactured to suit every possible superintendent, who wants certain features included, and who has no qualms against cutting out those other parts which he does not think valuable. A proper correlation of agriculture with the other studies would furnish plenty of material for school use which would mean more to the children than would text-books, especially in arithmetic, compositions, etc. For example, a Wisconsin boy living near one of the agricultural high schools, whose father scouted the theories of the school, had two pigs, and he went to one of the instructors to learn how best to feed and care for them. They did better than did any of his father's pigs, and compositions, always greatly dreaded before, now came readily, in each of them a naïve account of the progress in the conversion of his father.

Most of the pupils in our rural schools have but two sources of information: the world around them, and books. It is sad to think how little many children get from either. Nature Study in the earlier years teaches them to observe, inference gradually comes in as the child combines his observations, until in the higher grades he reasons from cause to affect. Until within the last two decades, the education of our schools was confined to thinking, the doing was limited to work with pen or pencil. Manual training is now recognized as of great educational value, but the impossibility of suitable equipment for wood, clay, and iron-working, has kept our rural schools still in the old ruts. School gardens make good this deficiency, and furnish the first means for co-ordination of mental and motor activity. As the child grows and his interest enlarges, he should be given larger opportunities for determining, guiding, exercising and controlling his motor activities; the work of the Boys' Agricultural Clubs is a good example of what may be done toward this end, and the increased attendance of scholars just from the rural schools upon the more elemental courses of the Illinois agricultural college shows the result in only one direction.

There is almost as much need of Nature Study with an agricultural trend, of school gardens, and of agricultural instruction, in our city schools, as in the country. Before the introduction of manual training, our educational system had made no provision for those pupils of a distinctly motor type. Through this means, many children are now being lifted to a higher plane of life than before; and the introduction of gardening into the schools of cities of considerable size has saved large numbers of others from dropping out of school without any broad life interest, and with but a small part of what the school should have given them. There are, moreover, in the schools of all our cities surrounded by farming or horticultural industries, a considerable number of children who must eventually gain their livelihood in such work, to say nothing of the pupils from rural communities who come into the urban schools because of their superior advantages. Certainly, if the aim of education is to fit for life, these boys and girls should be taught according to their needs, and not along some hard and fast course of study mapped out for those who wish to prepare for college. A large number of our cities now have manual training high schools, for children needing such training as they give, and it is right that it should be so. There is even more justification for the teaching of scientific agriculture, since it would tend to check the congestion of our cities, while the former has exactly the opposite trend. One extra teacher in a high school could give instruction in agriculture, open, to those who cared for it, as part of an elective course, along with most of the other scientific subjects, but with less language. Dr. True suggests that in case a small city inaugurated an elective course in agriculture, the outlying rural districts should help pay the expenses accruing, and send their common school graduates there for further study.

It is not possible to consider the need of a good education for children of rural communities, without touching, at almost every point, some argument for the educational value of agriculture, as such. Before formal schools were thought of, the race made its progress by studying nature and by manual training; later the school came in to supplement these, and finally usurped their place altogether, and absorbed the entire time of the pupil in the consideration of books. Every race has dug its civilization out of the ground, and that our children need to follow in their footsteps, in this regard, at least, is becoming more apparent with each mark of progress made by gardening and agriculture in our schools. It is time for us to ask, with Demolins, "Do our schools make MEN?" Are they helping to maintain the superiority of the Anglo-Saxon? Few visitors to Hampton, Thompson's Island, or the Berkshire Farm School do not remark, wistfully, "How I wish I might have spent my school life in such a place!" Thompson's Island will not take a depraved boy, the Berkshire School takes but few who are not; both, alike, turn out efficient young men. Hampton and kindred schools are reforming the South educationally as well as materially and morally, and they believe their best work is done through agriculture and gardening. It cannot be too strongly emphasized that scientific agriculture contains as great educational values, disciplinary and otherwise, as do, perhaps, any other means available at the present time. We have long believed that the painter, the designer, and the sculptor, express the highest form of thought in their handiwork; more recently, we have accepted working in clay, wood, or iron, as true expressions of the intellect. In the same way, exact and well-ordered thought is required in the problems of the farm, in bringing the various kinds of soil to the maximum of productivity, in the handling of complicated farm machinery, in expert butter making, etc.

Indeed, the value of elementary agriculture in the common schools is now recognized in many parts of the country, and each year sees its introduction into one or more states. It is natural that this should be so, long before there is much agitation for the introduction of agriculture into our high schools; for a technically trained teacher is not absolutely necessary in the elementary school to make the instruction valuable. Perhaps it is even wise to have such a study as this, in which the pupils may know almost as much as their teacher, who shall study with them, only using his larger powers for the skillful guidance of the children. To make a success of school gardens without having had experience with gardening is more difficult than to teach Nature Study without suitable preparation, but with foresight and pertinacity it can be done. In those States which have made such instruction mandatory upon elementary teachers, there are hundreds of cases of teachers who have made a success of teaching even elementary agriculture, although practically not at all trained for the work. But this is impossible in the secondary schools, although the need for such instruction is equally as pressing. Here, there must be trained teachers to assure scientific instruction.

If there were, in the early days of our agricultural colleges, any justification for their establishment, there is as much to-day for the foundation and maintenance of secondary agricultural schools. The advocates of the first Morrill Bill never dreamed of the early opening of a distinctly university field of agricultural work; on the other hand, the colleges were meant to train up skillful farmers. But they have so kept abreast of the wonderful progress made in the science of agriculture, that, except for their short and special winter courses, they do not to-day pretend to do much more than to give to the world a body of trained leaders, of experts in various lines. The great gulf between the elementary agriculture of the rural school and the collegiate work of our higher institutions demands bridging,—and our farmers have a right to demand it. Some of the state universities of the West are urging the placing of agriculture in the public high schools; to others it seems better to establish separate agricultural high schools, at least for the present, when we have no body of suitably trained teachers to place in all our secondary schools. The Committee of Five of the N. E. A., but one member of whom might be an expert in agricultural education, concluded as to agricultural high schools, "the character of the work already done in the existing schools of this class, the interest they awaken, and the hearty support they receive from the agricultural communities maintaining them, the history of these schools in foreign countries, the value of their work both for disciplinary and practical purposes, all combine to present the strongest reasons for the organization of schools of this type in large numbers, in agricultural communities. . . . . . In our opinion, the establishment of schools of this type is an absolute necessity for the proper development and organization of the rural school system."

A last argument, but by no means the least, for the educational importance of agriculture in our schools, is that in France and Belgium its introduction has materially raised the age of leaving school, in many sections "from two to three years," the governments say. What statistics we have in the United States go to show the same result; in the agricultural high schools of Alabama, Wisconsin and Minnesota there is constantly a good per cent. of students who would have dropped out of school with only an elementary education, had there not been the opportunity to learn of the things in which they were naturally interested. Agricultural high schools would be worth all they cost if they were attended only by those young people who otherwise would have finished their formal education with the elementary school.

The economic value of instruction in agriculture may seem to be so well recognized as to demand little more than a statement of its importance. But the essential thing to note is that our rural schools have not kept up with the wonderful progress made in agriculture. Our experiment station workers are constantly discovering facts of the greatest importance to the masses of farmers, but the new truths are surprisingly slow in seeping down into the soil needing enrichment. Every farmer boy ought to be taught how to choose the best seed corn; but it was because of the impossibility of this information reaching the people of the Middle West through the schools, that the railroads had to adopt the makeshift of carrying agricultural college lecturers over their lines, who taught as many farmers as could be gathered together how to raise a fifth more corn each year through the careful selection of seed. As a result, Iowa alone has added $8,000,000 annually to her income, and one could not estimate how much more this would have been had all the homes in the state been reached through the schools. The Boys' Agricultural Clubs are assuming something of this function, with the consequence that some Illinois boys are able to sell their corn for seed for five times as much as their fathers can command.

The economic necessity of such instruction is all the more imperative because even a farmer cannot live unto himself and be successful. Half of our total exports are agricultural products, and our farmers must have good markets abroad to reap rich returns for their crops. Science, however, knows no geographical boundaries, and the latest discoveries bearing on agriculture are taught in the elementary and secondary schools of several of the European countries, as we have seen. Moreover, in a monarchy a change in the educational system works from the top down very quickly,—witness the New Code of 1904, in England, where the elementary course of study was made to hinge on Nature Study with a very agricultural tinge, although a few months previous England was behind all Europe in such teaching. In practically all the European states, the government provides travelling schools and itinerant instructors for the teaching of new methods of production to young and old alike. Sweden each year selects scores of her more progressive farmers, one from a locality, and sends them on a visit to the better farms and experiment stations of the surrounding countries; on returning, each of these men acts as a centre of information for his entire community. It is just in this way that the European farmer is enabled to compete successfully with us. For example, he buys our entire surplus of cotton seed, very cheaply, and feeds its meal to his cattle, thus making him a successful competitor of ours in beef, while our Southern farmers did not recognize the value of cotton seed meal as a fattening product for a long time after its demonstration at the Tennessee experiment station.

The Danes receive $8,500,000 a year more for their bacon, butter, and eggs than England pays to any other country for the same amount of such produce, although twenty years ago, before the children of the country were generally taught about such things, the Danish products received less than the market price. Prof. G. L. McKay, of the Iowa state college, found Danish butter in England constantly bringing two to three cents a pound more than any other butter, because of its dry, mealy appearance. Investigation, however, proved that the butter in question actually contained two to three per cent. more water than Canadian or American butter. In other words, the Danes get two or three more pounds of butter from each 100 lbs. of butter fat, and yet sell it for two or three cents a pound more. Why? Because they have found the secret of making butter containing this extra amount of water appear to be extra dry, and the process is taught in the Danish schools. The farmers of Ontario have doubled their output since the founding of the Ontario agricultural college, without any appreciable increase either in population or acreage. The money value of an agricultural education was recognized by Mr. Joseph Chamberlain, when he said before the House of Commons, while advocating a liberal appropriation for agricultural teaching in the West Indies: "I regard the whole of this cost as being an expenditure intended to relieve the British government of future charges."

The prosperity of our farming districts and states is not alone in demanding scientific training for our future agriculturists and horticulturists: the welfare of our cities and of our great manufacturing states is dependent upon the agricultural prosperity of their surrounding territories to no slight degree. It would be of inestimable value to the factory employees of New England, if the abandoned farms, with which the states are dotted, could be made productive and economically valuable. Urban conditions in the South would be materially bettered by increased productiveness of the surrounding country, which can readily be brought about by a better education of its owners and tenants as to how to deal with their land. Intensive farming is already being made profitable in rock-ribbed New England on land once abandoned as not worth the taxes imposed, and scientific agriculture has netted a gain of $96.22 on an acre of the poorest land in Alabama. One of the Tuskegee Farmers' Leaflets tells how Mr. G. W. Carver raised 266 bushels of sweet potatoes on one acre of land, with a net profit of $121, while the average yield in the vincinity was 37 bushels per acre. "The average yield of cotton throughout the South is 190 lbs. per acre, usually below the paying point. Every acre can and should be made to produce 500 lbs of lint. However, if every grower added but five pounds an acre, it would be worth $15,000,000 (1903 prices) more than at present."

Blinded as we are, too often, by our utilitarian tendencies, and our search for the practical, it may seem at first rather strained to lay much stress on the ethical value of instruction in agriculture, but I am convinced that it is of supreme importance. Instances might be multiplied *ad libitum* of transformations in character wrought by school gardens, to say nothing of the love for God's out-of-doors and for His creatures, coming from Nature Study. Police officers and courts in New York, Philadelphia, Cleveland and Dayton, O., among other cities, are glad witnesses to the civic virtue arising out of the proprietorship of a little piece of land. Respect for others' property is engendered in no way so quickly as by letting a child possess some of his own, while economy, honesty, application, concentration, justice and the dignity of labor are brought into the children's lives in a telling way. A study of the laws of nature may well teach one that "Whatsoever a man soweth, that shall he also reap," in his life as well as from the soil. In working through a long season, side by side with others, the child gets his earliest and best instruction in social responsibilities, in what he owes to his neighbor, one of the most important things an individual of to-day has to learn.

Early experience in success and failure, and the learning to plan for the future and to work in expectation of reward later, are among other benefits of instruction in agriculture, and with these goes the consciousness of one's power to create value, to take care of himself in any crisis, to be independent when thrown on his own resources, "The ability always to fall on his feet." As a corollary there will come an added respect for farm and for the farmer, a thing greatly needed in America, where agriculture does not command the prestige which belongs to it in other countries. The country boy whose principal acquaintance with the soil has been unreasoning work with it, is not attracted back to it for his chosen residence after being called "Farmer" by the contemptuous boys of the town. Both urban and rural people need to be educated in this respect, although our agricultural colleges have wrought a great change for the better, for they are no longer satisfied to train men to be able to produce more grain to the acre, or more pounds of meat from a suitably balanced ration, but the students are being shown how they may become leaders among their fellows; how they may "make agriculture a live progressive art, which in the future shall provide a more stable and satisfactory basis for thrifty, intelligent, refined and happy rural communities, as well as a stronger guarantee for the manufactures, commerce, literature, art and science of a higher civilization."

Along with the better ethical condition which would result from an agricultural education, the religious instincts of the child or youth may well be appealed to, and healthfully stimulated. It is inconceivable that one could study nature, the out of doors, God's handiwork in the world, and not come to a truer reverence and love for Him who made all things and the laws by which they are governed. A most appropriate motto for a school of agriculture of whatever grade, or for any text-book unfolding the wonderful processes which man can bring about in nature, would be "Open Thou mine eyes, that I may see wondrous things out of Thy law."

Inseparable from a better ethical status of any considerable group of people, is the changed social condition of the entire larger group. It is because of the certainty of improved social conditions that such organizations as the American Civic Federation are putting forth their best efforts for the introduction of gardens into our city schools, and of elementary agriculture into the schools for rural communities. It goes almost without saying that anything which exerts a favorable influence educationally, economically, and ethically, will be of value socially. In addition, however, there may be pointed out several specific social problems confronting us to-day which, theoretically, a general education in agriculture ought to bring nearer a solution, and which practical experiments show may be done in reality.

We have already noted the change of character among the Indians brought about since the introduction of agriculture in the curriculum of their schools; more than 25% more Indians are self-supporting now than before, and around the tepees of the blanket Indians, even, little gardens are appearing, here and there, which means a relinquishing of the nomadic life and the rise to a higher plane of civilization. The numerous farm schools over the country, including the large secondary school of St. Joseph's Directory, of San Francisco, have turned scores and hundreds of youth out of the highways of crime into paths of industry and good citizenship. A large increase in the number of such schools would mean not only the prevention of crime, but the lessening of tramps and pauperism. Sociological studies of the past decade have shown that a negligible per cent. of our tramps have ever tilled a foot of soil. Agriculture is the one occupation which is not at present deplorably overcrowded, and in which there will be a place for at least twenty years to come, for every intelligent, strong man to make and to keep himself independent.

The most serious difficulty with which the American farmer has to deal, especially in manufacturing states or localities, is that of securing labor for carrying on his work. This is not confined to any particular section; New England and Kansas alike are crying for help. A locality of considerable area comes to mind where a great majority of the young men have left the rich farms of the surrounding country, to live in miserable little homes in the towns and cities, where they work in zinc smelters amid the heat and fumes of sulphur, prodigal of their health and strength, although they know full well how soon a smelter employee breaks down. The same thing is seen in the factory districts of the south, and in rural New England. This would not occur to such an extent were it not that our rural schools are at present largely devoted to educating the children away from the farm,—and in farming districts of uneducated people, one cannot blame the young people for getting away from such conditions as soon as possible.

France and Belgium, among the European countries, have set the tide of population distinctly toward the country since an elementary agricultural education was made compulsory; their census statistics prove it. In such of our own states as Illinois and Iowa, for example, where agricultural education is in its most flourishing condition in the United States, the young people are proud of their homes and of their farms, and with good reason. They go through high school, with the intention from the first, often, of going on to their agricultural college and of learning how to do better with their home farms than their fathers have done before them; not alone to learn how "to raise more corn, to feed more hogs, to buy more land, to raise more corn," etc., *ad infinitum*, but how to live on a social and intellectual level with their cousins of the city. It is not so much because their land was originally rich that these farmers have been able to make it worth from $100 to $150 per acre for farming purposes, to have country homes with all modern conveniences, to send their children to college, and to have a piano and the best reading matter in every home; but rather that they have *learned* how best to use their land. A few years ago several colonies of people from two of the richest agricultural counties of Iowa sold their farms for $100 or more an acre, bought Kansas farms for half as much, and are now raising as good crops as before, thus doubling their money. It is largely because of the added social advantages which a good agricultural education gives that the farmers of the Middle West are so proud of their agricultural colleges, and of such agricultural high schools as those of Wisconsin and Minnesota.

The American Institute of Social Service is conducting a propaganda for the establishment of schools "for children of weak and undeveloped constitutions, whose power of resistance is small," where the buildings shall be surrounded by trees, and where gardening shall be the particular feature. Such schools are well known in Germany, where they have proved of especial value in preventing tuberculosis. The largest of them, at Charlottenburg, accommodates 120 children, who are selected by the board of health; and according to the report made to the Tuberculosis Exposition in Paris, in October, 1905, over 70% of their pupils have been entirely cured or greatly improved, while less than 2% grew worse after admission. A recent editorial in Harper's Weekly reports organized opposition from the Gardeners' Union in Germany, to the prescription of gardening, by physicians, for anæmia, neurasthenia, chronic bronchitis and chronic gastritis, a treatment now becoming rather common, because gardening, "being found useful in curing the sick and building up the weak, will tend to make a large number of such people immediately become gardeners." The district nurses of some of our American cities report much better health among children at work in school gardens than before such work was undertaken,—a thing of no inconsiderable importance to us as a people.

What seems at present to be the most hopeful sign of all, however, is the closer alliance of progressive agriculture with our system of elementary education. The teachers of rural schools are coming to attend the farmers' institutes, while the farmers, in turn, give closer attention to school conditions in their midst. In a number of instances, the state universities and the state farmers' institutes are working hand in hand for the making of efficient men and women from the country children. Of course, this largely means an agricultural education, and we have seen at some length, the value which such an education has proved to have, at home and abroad. Wherever tried in the United States, whether in elementary or in secondary schools, it has more advocates to-day than ever before. More states are introducing it into their public school systems; where it is now a matter of local option, the farmers of counties adjoining those in which agriculture is taught, are demanding a like education for their children. The offering of agricultural courses for teachers by normal schools and colleges, reflects the demand for them. Minnesota and Wisconsin have each within a year doubled the number of agricultural high schools receiving state aid. The Indian service has established a strictly agricultural Indian school in Oklahoma. The bright spots in the South have been made such by agricultural education. The Macdonald Institute, at Guelph, Ontario, marks a final step in advance by keeping the supply of thoroughly trained Canadian teachers abreast of the demand for instruction of this kind.

We are in the midst of a new and great interest in rural development, in farm life, in the achievements of science in agriculture. This has come along with, and perhaps partly as the result of, the rapid increase of facilities for intercommunication among the farmers themselves, and between them and the towns and cities of their localities. Rural free delivery gives the farmer his paper and other mail matter, delivered daily at his door. A mesh of telephone wires is binding together the homes of our agricultural population,—often a larger proportion of the farmers of a county have phones in their houses than have the residents of a city. Electric railway lines are threading their way past the doors of the country homes, and increasing greatly the facilities for travel. The progress in farm economics is reflected in the modern homes, and in more pleasant habits of life than have ever obtained before. The children and young people are receiving a better education; in several of our states a more practical and useful one, also; often they are carried in warm, dry vans to a consolidated school, where they have the advantages of a graded school, competent teachers, and a hygienic building. Consolidated schools are spreading as fast as many other educational advantages of recent introduction, and, the country over, not one has been abandoned after being tried.

Progress in education among the rural masses has not been so prompt as in some of the other lines indicated, but we may be sure that, in the future, it will not lag far behind. It would not be safe to say in exactly what shape this development will take final form, but, from what we have seen above of the ever-increasing growth of Nature Study, gardening, and agricultural instruction in our schools, we may be certain that eventually all three will be taught in our rural schools, and the former two in all of our city schools; while the agricultural high school will become an indispensable feature of our American school system. Whether the ideal of a graded curriculum from the beginning of the primary school, on through the agricultural high school and up to the graduate courses of the agricultural colleges shall obtain, perhaps may not be predicted, but certainly it is a consummation devoutly to be wished.

THE HYGIENE OF THE TEETH.

By Wm. H. Burnham.

"A tooth is more valuable than a diamond," said Cervantes; and wealthy, we may add, the man who has thirty-two. There is a German proverb to the effect that half of digestion is done by the teeth. "Gut gekaut ist halb verdaut." It should be added that indigestion also begins in the mouth. A child's digestion, a child's temper, a child's general health depend largely on its teeth. The work done in a schoolroom, the discipline of a schoolroom, even the odor of a schoolroom, depend in great measure on the condition of the children's teeth. In recent years the teeth of school children have been the subject of many investigations which emphasize the importance of their hygiene. Among these are the following:

In 1877 Odenthal reported in Germany a study of 987 children, among whom he found 72% with diseased teeth.[1] In 1887 Ottofy[2] investigated the teeth of 623 school children in Dakota and Illinois and found in a total of 14,000 teeth 30% defective. In 1893 Pedley, in England, published the results of more extended investigations. 3,145 children were examined—a total of 70,000 teeth. 22.5% of the children had perfect teeth. 77.5% had defective teeth. Of the total number of teeth 12.8% were defective. He estimated that about two-thirds of these could be saved by filling. Hence he strongly urged (the first perhaps to do this) that dentists be appointed to each school, with sufficient pay for their services. In the same year, 1893, Unghvari, a Hungarian physician, investigated 1,660 pupils, of ages from 6 to 12, and found 87.2% with defective teeth. 23,906 teeth were examined,—of these 15.4% were defective.

Since these pioneer investigations many studies of the dental condition of school children have been made. Of recent investigations the following are representative and give typical results.

A study of the teeth of school children was made a few years ago by the association of dentists in the province of Schleswig-Holstein, Prussia.[3] 19,725 children, from 6 to 15 years of age, in 19 cities were examined. Of these 95% were found afflicted with caries. Only 218 children had ever been treated by a dentist. In Kopenhagen[1] among 10,000 pupils 92.7% had defective teeth; in Halberstadt[2] among 1,303 nearly 100%.

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[1] Cited by Jessen, p. 438. See Bibliography, No. 8.

[2] For this and the following see Röse, Zeit. f. Schulgesundheitspflege, 1895, No. 2; also 1892, No. 5, pp. 233-234, and 1893, No. 2, p. 100.

[3] Zeits. f. Schulgesundheitspflege, 1900, No. 7.

Dr. Karlewski investigated the teeth of all the children in the Peoples Schools in Rheydt.[3] Among 5,300 children he found only 4.37% with completely healthy dentition. In an investigation of 9,557 children in the Peoples Schools in Augsburg 99.41% were found with defective teeth. Only 0.59% were free from caries.[4] Dr. Kielhauser, of Graz, in a careful investigation found from 67% to 82%. Gawronsky, in Gymnasien for girls in Moscow, found from 90% to 97%. More recent investigations have also shown that most children have diseased teeth, although in a few instances smaller numbers have been reported. In Leipzig, for example, where for several years there has been medical inspection, the percentage with defective teeth reported for 1901 was only 44.3%.[5]

An important investigation has been made in this country by Supt. Johnson.[6] "Four hundred and ninety-seven school children in Andover were examined; 257 boys, 240 girls, from four years of age to eighteen. 96.9% of all the children were afflicted with caries. Only 15 children: 9 girls, 6 boys, had perfect teeth, and all but two of these were under nine years of age. 31.4% of the teeth were diseased: among the boys, 32%; among the girls, 30.8%; 41.7% of the temporary teeth, 26.5% of the permanent teeth."[7]

At the International Dental Congress at Kopenhagen, in the year 1895, a report was made to this effect:[8] The number of school children suffering from defective teeth amounts in civilized lands nowhere to less than 80%, and rises to 98.5%. For most localities this seems to remain a conservative estimate today. Jessen's table for different countries gives the number from 65% to 100%.[9]

The studies already made show certain interesting correlations.

1. A correlation between the percentage of people with diseased teeth and the degree of civilization in a country has been pretty clearly shown. Dr. Röse cites the results of older

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[1] Zeits. f. Schulgesundheitspflege, 1897, p. 630.
[2] Zeits. f. Schulgesundheitspflege, 1897, p. 292.
[3] Zeits. f. Schulgesundheitspflege, 1903, p. 105.
[4] Zeits. f. Schulgesundheitspflege, 1904, p. 885.
[5] Zeits. f. Schulgesundheitspflege, 1902, p. 253.
[6] *Ped. Sem.*, Vol. VIII, pp. 45-58.
[7] *Loc. cit.*, p. 47.
[8] Zeits. f. Schulgesundheitspflege, 1895, 6, p. 350.
[9] Intern. Kongress f. Schulhygiene, III, p. 498.

studies[1] to the effect that of Eskimos only 2.5% have defective teeth, of Indians, 3 to 10%; of Malays, 3 to 20%; of Chinese, 40%; while, as has been shown, 70 to 100% of Europeans and Americans are thus diseased. To determine the causes of this correlation is a more difficult matter. Perhaps, as many think, modern food is the special cause.

2. Although not yet clearly determined a correlation probably exists between the condition of the teeth and general environment. Dr. Röse says it is a wide-spread belief that country people and the poor have better teeth than those living in the cities and the well-to-do. This he did not find to be true. Of all the places where he made investigations, the worst condition of the teeth was found in the poor villages of the Black Forest. The number of children with defective teeth in four towns, for example, was from 98 to 99%, the number of defective teeth from 36% to 40%.

Some other investigators find apparently different results. Pedley studied the dental condition of 3,800 boys and girls, of ages from 3 to 16[2]. Of these 326 had sound teeth. The schools where his investigations were made were within 20 miles of London, on extensive grounds, where the inmates had all the advantages of good air and exercise. He thinks that caries occurs more frequently among the well-to-do classes. Thus in a high class public school, where the boys, however, were over 13 years of age, of 427 examined only 7 had sound and complete dentition, although many of the defective teeth had been filled.

Dr. Spokes has collected statistics during a period of nine years at one of the English Public Schools. Twelve hundred boys of a good social class were examined and the actual condition of each dentition carefully recorded. The average age was 13 years 10 months. As regards the permanent dentition only 3% had sound teeth, 18% had teeth rendered artificially sound by extraction or filling. The remaining 79% required treatment, and the percentage of diseased teeth rose from 2.19 at the age of 13 to 6.16 at 17 years of age.[3]

The British Dental Association has investigated the conditions of the teeth of children in the Poor Law Schools, Workhouses and Reformatories. Fourteen per cent. of these children had sound teeth.[4]

Whatever may be the truth as regards these conflicting results, and whether laboring people have better or poorer teeth than the well-to-do, and whether the country children or the city children are better off in this respect, anything that affects the general nutrition is likely to affect the teeth; and probably some special factors in the environment are important, for example, the richness of a given locality in lime.

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[1] Zeits. f. Schulgesundheitspflege, 1895, No. 2.

[2] The Hygiene of the Mouth, Philadelphia. pp. 12-15.

[3] Spokes, Sidney: The care of the teeth during school life. International Kongress für Schulhygiene, Vol. III, p. 453.

[4] Spokes: *loc. cit.*, p. 454.

3. An interesting correlation apparently exists between the percentage of sound teeth among the children in a community and the amount of lime in the soil. This was first shown in the extensive investigation by Dr. Röse of the teeth of school children in Baden and Thüringen.[1] In the regions deficient in lime 1.3%-2% had perfect teeth. In the regions rich in lime 17.2%-21%. The color of the teeth in Thüringen was also observed. In the districts rich in lime a brilliant yellow was the predominating color. In the regions deficient in lime, it was white yellow or blue gray. And the teeth were better formed in the former than in the latter regions. The total results were as follows:

In Baden.

	No. of children.	% with defective teeth.	% of defective teeth.
1. Freiburg,	3,460	98.7	35.
2. Localities deficient in lime,	747	98.7	35.3
3. Localities rich in lime,	911	79.	16.1

In Thüringen.

	No. of children.	% with defective teeth.	% of defective teeth.
1. Localities deficient in lime,	2,973	98.	34.9
2. Localities rich in lime,	2,708	82.8	16.7

This correlation was corroborated by studies in Sweden which showed that the percentage of diseased teeth was inversely as the degree of hardness of the water. The results for several towns are shown in the following table.[2]

	Hardness of water.	% of children	% of diseased teeth.
Boras,	0.5	97.7	25.0
Karlskrona,	0.7	96.5	24.6
Stockholm,	3.5	96.9	24.2
Karlsham,	4.8	93.9	23.0
Skano,	8.5	92.1	17.7
Malmö	12.0	90.3	15.4

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[1] *Loc. cit.*

[2] Zeits. f. Schulgesundheitspflege, 1898, p. 331.

In an investigation in Halle in 1902 the dental condition of 4,901 boys in the Peoples Schools was reported, and of these 95.2% had defective teeth and the average for each pupil was 6.6% diseased teeth. Here the character of the water was reported as moderately hard.[1]

4. As might be inferred, the percentage of children afflicted with caries as well as the percentage of decayed teeth is correlated with the age of the pupils. Supt. Johnson found that even at the age of four 29% of the teeth were diseased. This number increased to 41% at the age of nine; the greatest immunity was at eleven, when most of the temporary teeth had been replaced by the permanent teeth and only 21% were diseased; but the number increased again to 43% at fifteen.[2]

5. As regards a correlation between dental condition and mental ability it is noteworthy that in Magdeburg 4,522 children were investigated by a dentist and special attention given to the children in the schools for the backward. Among children of the latter schools caries was not found as frequently as among the other children. 5.95% had sound teeth as against 3.07% of the other children. Other diseases, however, were more frequent among these than among children in the regular schools.[3]

While feeble-minded children also, as indicated by the observations of Hrdlicka and Johnson, seem to compare favorably with normal children as regards the condition of their teeth, and while dull children often have good teeth, nevertheless a correlation between the dental condition and the success of the children in school work is indicated by Johnson's study. He reports:

'The children examined were classified by their teachers as bright, average, or dull. Among the children with good teeth there were found 13 bright children to every 10 dull children, but among the children with poor teeth were found only 8 bright children to 10 dull children. It was found, also, that very generally the average age of children with good teeth, in any grade, was less than that of children with poor teeth for the same grade. So far as these statistics go, they seem to indicate that the chances of children with good teeth are appreciably better for scholarship and promotion than are those of children with poor teeth.'

6. Several investigations indicate a correlation between the condition of the teeth and the physical development. Johnson reports that the children with good teeth in his schools were on an average about half a year ahead of the children

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[1] Zeits. f. Schulgesundheitspflege, 1904, p. 333.

[2] *Loc. cit.*

[3] Zeits. f. Schulgesundheitspflege, Vol. XVI, 1903, p. 337.

with poor teeth in physical development as shown by weight.[1] Likewise studies of the dental condition of recruits in Dresden showed that those with bad teeth furnished a third less capable soldiers.[2]

Some investigators have found results that seem to indicate that the conditions of school life have an appreciable effect in causing the large per cent. of defective teeth among school children. Galippe observed that in the last years of school life, at the time of preparation for the rigid examinations, the number of cases of caries increased. Siterwood also found that in a few months after entering school the teeth change. And Magitot has also pointed out the dangers of continued study in its effect on the teeth. The effect, of course, may be increased by heredity and the like. But many authorities believe that depressed physical condition, overwork, cerebral hyperæmia, and possibly the use by the brain of phosphates needed by the teeth, are among the circumstances that cause this increase in disease. The fact remains that those pupils who overwork in preparation for examination and the like, are especially liable to this disease. And Johnson thinks that 'a very bright child may have very poor teeth, the bad condition of the teeth being, in a considerable measure, induced by over stimulation of the brain.'[3]

The close connection between disease of the teeth and other diseases is indicated by the studies that have been made. Of the various disorders frequently caused or aggravated by decaying teeth are not only enlarged glands of the neck, headache, neuralgia, earache, but indigestion, heart trouble, irritation of the nervous system, epilepsy, and perhaps chorea and other neuroses. Professor Miller, in a report to the Central Association of German Dentists in Berlin, says: "Mass studies of school children and soldiers have shown that frequently the general nutrition suffers on account of defective teeth."

Some of the concrete cases reported by Pedley are specially instructive. The following are examples.

"A married woman, æt. 36, had for two years suffered from excessive cardiac irregularity, and frequent attacks of spasmodic heart panic. She attributed her illness to much mental anxiety. Her symptoms had increased and the cardiac disturbance became so constant that she could neither go into society nor receive friends. There was no valvular disease of the heart, its dimensions were normal, but the action was irregular and intermittent. Her teeth were extensively decayed, surrounded with tartar, and the gums were unhealthy. The affected teeth were removed under gas and ether, 'which she took well,' and from that time all the heart symptoms entirely ceased.''[1]

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[1] *Loc. cit.*, p. 54.

[2] Zeits. f. Schulgesundheitspflege, 1895, p. 427.

[3] *Loc. cit.*, p. 53.

''A boy, aet. 13, has had frequent attacks of epilepsy for the last eighteen months. Latterly his mother has noticed that some days he rubs his left cheek, complaining of face-ache, after which the fit follows. On examining the mouth, there is to be seen a molar tooth considerably decayed, with a swollen gum around it, and partly growing into the cavity. It is not very tender to the touch, and the examination does not give rise to toothache. On questioning, I find the sensation which the boy experiences before a fit does not seem to be one of pain, but rather of an indefinite uneasiness. He always has a fit the night this comes on. Has never felt it during the day, it is always about seven or eight o'clock. I desired the mother to have the tooth extracted, and ordered a simple saline with a quarter of a grain of belladonna to be taken twice daily. This was in June. The tooth was extracted the next day. I saw this boy once a fortnight from that time for four months, but he has had no recurrence of the fit.''[2]

Without laying stress on the investigations which suggest at least that the conditions of school life are in part responsible for the prevalence of caries, it is clear that the hygiene of the teeth is an important part of school hygiene. First, good teeth are necessary for good digestion. With many pupils suffering from indigestion and impaired nutrition, and with from 80 to 98% of them liable to have the toothache at any time, the conditions are not favorable for cheerfulness, enthusiasm, and good discipline. 22.5% of the children in Andover said they had suffered a great deal from toothache during the preceding year; half of the rest said they had suffered more or less. Second, poor teeth interfere with articulation and make instruction, especially in reading and singing, more difficult. Third, it is impossible to have pure air in a schoolroom where there are so many decaying teeth.

It is not necessary to consider in detail the causes of diseased teeth. They seem to be two combined: 1st, lack of nutrition—especially lime; 2d, micro-organisms resulting from lack of care of the teeth. Dr. Röse's investigations indicate the important influence of the former cause. Galippe and Vignal long ago made investigations that indicated the influence of the latter. Of course these two factors work together. The less perfectly the teeth are developed from lack of nutrition, the more likely they are to succumb to the bacteria. The

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[1] Pedley, R. D.: The Hygiene of the Mouth, pp. 85-86.

[2] Pedley: *loc cit.*, p. 24.

French investigators just mentioned, according to a report in 1889 to the Paris Biological Society,[1] studied the bacteria that had penetrated the dentine, and found six different kinds of micro-organisms, and three kinds in the pulp of the tooth. From the character of some of these their effect on the teeth is clear. Several of them form lactic acid, and this destroys the mineral substances of the teeth: and others that destroy albumen attack the organic matter.

Whatever the ultimate cause of decaying teeth, the presence of micro-organisms in the mouth is the immediate cause. When the debris of food is left between the teeth this forms a favorable medium for the bacteria, consequently the one essential prophylactic measure is absolute cleanliness.

As regards food, it is doubtless advisable that the coarser kinds of bread, hard rolls and the like, which require chewing, should be used. Thorough mastication is an advantage not only as an aid to digestion but directly for the benefit of the teeth. Excessive use of sweets is bad, and yet this is not nearly so bad, perhaps, as soft, starchy food. According to Miller[1] starchy and amylaceous substances are more detrimental to the teeth than sugar. Sugar is readily soluble and easily carried away, whereas amylaceous matter adheres to the teeth for a longer time. The starch is converted by the ferment of the saliva into sugar, and this sugar acted upon by the bacteria produces lactic acid. Pedley finds from his own experience among the poor in the hospital that this seems to be true, and he deems it a mistaken idea to deprive children of wholesome sweets in order to preserve their teeth.

It is specially important that the temporary teeth should be cared for. First, because they serve the purpose of mastication during a most important period of life; and second, because carious temporary teeth often spoil the permanent teeth. These teeth come half a year sooner with girls than with boys. The change also comes sooner with girls. These teeth may begin to decay as soon as they come. Little attention is usually given to them from the mistaken notion that it is unnecessary to preserve them. This is really a curious illustration of our general attitude toward children. Our idea of a child has been that of the philosopher Franklin, a child is an important creature because some day he will become a man. Hence we feed children that they may grow to manhood, we educate them that they may be prepared for manhood's duties, we sacrifice their baby teeth because they will not last till adult life anyway. The comfort and perfection of a child as a child we have neglected. The general attitude towards children's teeth is an interesting case in point. If they become painful they can be extracted. As to mere discomfort, the children will make all the better men and women from having learned to bear disagreeable things when young. These teeth, however, should be cared for and filled when they decay and extracted at the proper time. This not merely to preserve a child's comfort and the best condition of nutrition, but because normal temporary teeth are a condition of normal development of the permanent teeth.[1] It is a concrete case in the child's anatomy where normal immaturity is a condition of normal maturity.

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[1] Zeits. f. Schulgesundheitspflege, 1889, pp. 602-604.

[1] The Micro-organisms of the Human Mouth, p. 207, quoted by Pedley, p. 8.

Specially important is the care for the sixth year molar. This is one of the strongest and largest teeth in the head, and yet Mr. Johnson found that one in six of these teeth were diseased during the first year; and in Copenhagen it was found that one-third of the 6th year molars were decayed already in the 7th year.[2] It frequently happens that these teeth are lost before parents realize that any permanent teeth have come.

"Dr. Mary E. Gallup, of Boston, for several years gathered statistics of the 6th year molar in the mouths of native born Americans. Of 3,000 Americans over 25 years of age, only seven had all four sixth year molars in the mouth."[3]

Dr. Henie gives in the following table the percentage of these teeth diseased at different ages as found in his study of 660 school children in Hamar in Norway.

SIXTH-YEAR MOLARS.[4]

Among	7	years old	children	18.5%	teeth	diseased.
"	8	"	"	40.9%	"	"
"	9	"	"	50.3%	"	"
"	10	"	"	52.8%	"	"
"	11	"	"	49.3%	"	"
"	12	"	"	53.3%	"	"
"	13	"	"	55.5%	"	"
"	14	"	"	57.5%	"	"
"	15	"	"	60.3%	"	"

The indifference to the necessity of caring for children's teeth in civilized communities would be amazing and incomprehensible unless we largely accept Lombroso's philosophy of laziness, that the law of inertia is the principle to which all human activity conforms. Sound teeth are essential to digestion, articulation, æsthetic satisfaction, and general comfort.

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[1] Johnson: *loc. cit.*, p. 49.

[2] Zeits. f. Schulgesundheitspflege, 1897, p. 630.

[3] Cited by Johnson: *loc. cit.*, p. 48-9.

[4] Zeits. f. Schulgesundheitspflege, 1898, Vol. 11, p. 69.

Every permanent tooth saved is better for a child than a hundred dollars in the savings bank. And yet parents make slaves of themselves to save a few dollars for their children and have not time to teach them habits of common decency in regard to dental hygiene; and when the paltry savings have been accumulated for the rainy day, the gold of Ophir cannot make the lost molars grow again, and it is good fortune if artificial teeth save their children from disease and speech defects. This indifference of the community to the importance of caring for children's teeth is so general that special measures should be taken to overcome it.

In Germany some attempts to enforce dental hygiene have been made in the schools. In Russia, Gawronsky reports that in a number of Gymnasien for girls the value of special attention to the teeth and of special instruction has been shown. He advocates school dentists for the elementary schools and special instruction for dormitories. By decree of July 31, 1889, Von Gossler required of the pupils in higher schools that they clean their teeth daily after the evening meal. Hygienic rules have been formulated by others.[1] We cannot do as the Germans do. But more adequate instruction should be given. Habits of dental cleanliness should be developed until a child learns to regard a toothbrush as a necessity. A British officer who was with our army in Cuba has reported his astonishment at one thing that he observed among our regular soldiers. When the heat was so intense that the soldiers had thrown away blankets, clothing and the like—everything except the barest necessities,—company after company marched by, each soldier with a toothbrush twisted in his hat band. Such an attitute toward the toothbrush should be developed in the home and in the school.

Trouble from the parents has naturally been found when an effort has been made to enforce dental hygiene. When care of the teeth was required in the French Lycées, Magitot met great resistance. Parents are apt to be satisfied if there is no acute trouble; to take prophylactic care is not thought of,—this is a luxury for the upper ten thousand. It was said a few years ago that two-thirds of the dentists in Vienna were in the aristocratic quarter, only one-third in the other nine districts. Much the same is probably true of our own large cities. Good teeth are apt to be considered an ornament rather than tools.

Dr. J. Frank, President of the Dental Association of Vienna, maintains that caries of the teeth is a plague, and the focal point of action in the sanitation of this disease is in the school.

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[1] Zeits. f. Schulgesundheitspflege, 1895, 10, 11, pp. 603-604.

Even at the entrance of school life, in the sixth year, every third child has diseased teeth.[1]

In the last few years a noteworthy movement to meet this evil by establishing dental clinics in the schools has begun. School dentists have been in service for several years in St. Petersburg, Leipzig, Hamburg, and a number of other European cities. In Hamburg the work was begun privately. A large number of dentists gave part of their time for the care of the pupils' teeth in the schools. At a definite hour each week school children suffering with diseases of the teeth could be sent for treatment by the principals of the schools. One serious difficulty was met, however. The hours of the dentists were between nine and four, and the school board objected to having the children consult the dentist during school hours, not considering, apparently, that a child with the toothache does not learn much in school. In Altona it is reported, a similar plan has been carried on without injury to instruction.[2]

In Darmstadt the Association of Hessian Dentists, in 1902, opened a clinic for the treatment of school children with defective teeth. This work was supported by the contribution of a private individual but carried on with the co-operation of the city officials.

In Strassburg a school clinic supported by the city, said to be the first in Germany, was opened in the year 1902-3.[3] The need of dental inspection in the schools, the methods, and the results are shown by the work in this city. Dr. Jessen, the Director of the Clinic, gives the following report for the year 1904-5.[4] The number of children inspected was 4,372,—2,269 between 3 and 6 years of age, 2,103 between 6 and 8. Of the younger children only 15.95%, of the older only 7.02% had healthy dentition. The younger children had a total of 9,427 diseased teeth; of these 1,655 in gangrenous condition. The older children had a total of 11,701 diseased teeth; of these 3,392 gangrenous. About a third of those treated had visited the clinic on account of toothache. The investigation and treatment were so arranged that the instruction was disturbed very little. Special blanks were prepared, and thus it was possible to examine on an average 80 children in an hour. The School Inspector, Herr Motz, maintained that the total number of school hours spent in the examination of the teeth and treatment was less than the total absence from school formerly on account of the toothache and other results of diseased teeth.

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[1] Zeits. f. Schulgesundheitspflege, 1903, Vol. XVI, p. 180.

[2] Zeits. f. Schulgesundheitspflege, 1903, Vol. XVI, pp. 306, 327.

[3] Zeits. f. Schulgesundheitspflege, 1903, Vol. XVI, pp. 423, 645.

[4] Vierteljahrschrift f. Körp. Erziehung, I, 4, pp. 177-186.

The cost of the dental inspection and treatment for the year was only about $1,600 (6,400 Marks).

It is true that certain criticisms have been made of investigation of the teeth in the schools on the ground of loss of time, the danger of infection in these mass investigations, objections made by parents, etc.; but experience shows it is a legitimate and necessary part of health inspection.

The important points emphasized by these studies of the teeth of school children and adults may be résuméd very briefly.

1. Caries of the teeth seems to be a disease of civilization. At least observation and the somewhat meagre studies already made indicate that the disease is rare among primitive peoples.

2. It appears that usually from 80% to 100% of school children have diseased teeth. The estimate of the International Dental Congress referred to above is a conservative one, although where dental inspection has been introduced, and in some remote country districts, like parts of Siberia, there may be a smaller percentage.

3. A direct relation between the number of defective teeth and the amount of lime in a region seems to have been established by the investigations of Röse and others.

4. Among the causes of defective teeth the following seem to have been demonstrated: lack of nutrition, use of soft, starchy foods, use of sweets, as well as the lack of lime in the water, already noted. The immediate cause, however, is the presence of micro-organisms in the mouth.

5. The results of defective teeth have been emphatically shown by the investigations and reports of dentists. Neuralgia, headache, earache, indigestion, cardiac disturbances, enlarged glands of the neck, sub-acute blood poisoning, and various nervous disorders, including some cases of epilepsy, and perhaps also of chorea, are among the diseases caused or specially aggravated by decaying teeth. In looking for the cause of these various disorders, examination of the teeth by parents and even physicians is strangely neglected.

6. As regards hygiene, first it should be noted that care of the temporary teeth is of special importance. These temporary teeth should be cared for first because of their importance for the child's nutrition at the time, and second because caries of the temporary teeth often injures the permanent teeth. These should be kept in good condition as far as possible; and with general hygiene and proper care of these teeth the young child will probably seldom suffer from disease of any kind.

7. The sixth-year molars are very apt to be lost soon after they appear. Hence the need of special care for them.

8. The whole hygiene of the teeth resolves itself into a mat-

ter of cleanliness. The study of bacteriology has put the whole subject of cleanliness on a scientific basis, and it shows that cleanliness of the mouth is an important factor of hygiene. Pupils should be trained to habits of cleanliness in this respect, to know the luxury of a clean mouth. Then they will take care of their teeth.

9. As it cannot be hoped that sufficient care will be taken to prevent decay of the teeth altogether, and as instruction both of pupils and parents is needed, it is imperative that school dentists should be appointed to examine the teeth of children periodically. Dental inspection is an essential part of health inspection.

10. In general the importance of this whole matter of the hygiene of teeth for school hygiene is obvious. It is impossible to have pure air if 95% of the children suffer from caries. It is almost impossible to have good discipline with a large number suffering from toothache or the reflex effects of diseased teeth, and it is not easy to get the most efficient school work without a better condition of nervous and general health than is possible with so large a number of defective teeth.

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GENIUS AND STUPIDITY.

A STUDY OF SOME OF THE INTELLECTUAL PROCESSES OF SEVEN "BRIGHT" AND SEVEN "STUPID" BOYS.

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I. INTRODUCTION: PSYCHOLOGY AND LIFE.

One of the most serious problems confronting psychology is that of connecting itself with life. The wholly modern development of psychiatry and criminology, the recent activities in individual psychology, a continuous tempest of articles, pamphlets, and books on the relations of psychology to education, all point to the fundamental importance of the task.

This problem offers itself not to psychology alone but to all the sciences, and it may be said that they have excuse for existence only to the extent to which they are capable of framing a solution. Humanity has a vested right to demand of the scientist now and then that he show his hand. Theory that does not some way affect life has no value. Morever, as President William Lowe Bryan has pointed out, (3) such theory is *ipso facto* not true. That it seems so is due to the "illusion of precision," in the interest of which we shut out from consideration all of reality except the portion immediately before us. Why wonder, then, that that atom has no connection with the manifold from which we took it?

It hardly need be said that other sciences have bridged this chasm more successfully than psychology. In the words of Spearman, "When we pass an electric current through water until it vaporizes into bubbles of hydrogen and oxygen, we can be tolerably certain that we have still got in our jars almost the whole of the same material substance, only reduced to simple form. But when we assert that the decision of Regulus to vote against making peace with Carthage was no more than a conglomeration of visual, auditory and tactual sensations in various stages of intensity and association, then there is an undeniable risk that some precious psychical elements may have slipped through our fingers." (18, p. 204.)

On the other hand, John Stuart Mill held that the common opinion that the thought, sentiments, and actions of human beings cannot be the object of science, rests upon the confounding of all science with exact science. Mill conceived an intermediate between the perfection of science and its extreme imperfection. For example, a phenomenon may result from two sorts of causes; from major causes accessible to observation and calculation, and from minor, secondary causes not thus accessible. In such a case we shall be able to account for the principal part of the phenomenon, but there will be variations and modifications which we cannot completely explain. Mill compares the science of human nature with the science of the tides, which can never become exact in the strict sense, and yet is exact enough to be practically useful. The exactness is not like that of present astronomy, but more comparable to the condition of astronomy when its calculations included only the principal facts and not the perturbations. Ribot, speaking of Mill's proposed science of *Ethology*, says: "No doubt this science will always partake considerably of the nature of art; will it not be sufficiently exact, however, to render its employment legitimate? The naturalists have discovered certain organic correlations on which they rely for the reconstruction of an animal from a few fragments. Might not the psychological conditions be equally arrived at? Let us suppose that by an accumulation of sure and varied experiments we were enabled to establish, for instance, that a certain manner of feeling supposes a certain variety of imagination, which in its turn supposes a certain mode of judgment and reasoning, which again supposes a certain method of acting; and let us suppose that this determination should be as precise as possible. Then by the aid of a few facts it might be possible to reconstruct a character, since the problem would reduce itself to the following: Given a member of the series to find the entire series."

The sciences, as Comte observed, were historically produced in the order of decreasing generality. We need, therefore, no greater proof of the lingering of psychology in its infancy than the striking fact that little application has proceeded from it.

Thus it was for centuries with physics and chemistry, thus also with the biological sciences, whose results are yet only dimly foreseen. The difference among the sciences in this respect lies partly in the subject matter; whether it is living or inert. But the difficulty is not thus wholly accounted for. The biologist is not nearly so badly off as the psychologist. He knows a particular plant or animal organism better than any ordinary individual does, while on the other hand it has passed into proverb that of all men the psychologist is the most helpless before the individual mind. If taken to task, he pleads the doubtful excuse that it is his business to know mind in general and that he has nothing to do with this or that individual mind. Can we wonder that the mathematician, physicist, or even the biologist, who, like the psychologist, deals with life, should smile occasionally at the artificial constructions of psychology?

One thing seems certain; viz., that psychology and life cannot be connected until we have transcended the psychology of structure. To that end psychology will need to follow in the path of biology, which is becoming increasingly dynamic. From this point of view, the *structure* of the animal or plant does not concern us except as it shapes the force of the organism as a dynamic agency. It is thus that the chasm between the old morphology and life is being spanned. If psychology would seriously enlarge its *raison d'être* it must follow this example.

On the other hand, it is asserted, as by Professor Titchener (22), that whatever may be in store for a future functional psychology, the present demand is more pressing for the study of structural elements. It is true that always in the history of science, the static and structural aspects receive attention first, just as in biology anatomy developed before physiology. But in psychology there is already a tendency in the opposite direction. We are beginning to realize that the hypostasized segment of consciousness known as sensation is not the ultimate and true reality. In psychology, function, in part at least, produces structure. We cannot truly know what consciousness is, till we know what it does. Professor James has succeeded in giving meaning to our conscious states without breaking them up into fragments. "On the whole," he says (8), "I venture still to think that we really gain a more living understanding of the mind by keeping our attention as long as possible upon our entire conscious states as they are concretely given to us, than by a post mortem study of their comminuted 'elements.' This last is the study of artificial abstractions, not of natural things." This conception, if logically carried out, can only end by extending the field of psychology to include logic, ethics, and æsthetics. Logic becomes the applied psychology of reasoning, ethics the psychology of motives and impulses, and æsthetics a chapter in the psychology of the emotions.

The earliest attempt, at least in modern times, at a direct relating of psychology and life, was phrenology. This, science at once disowned. More recently the French have made, on little larger empirical basis, elaborate classifications of types of character. Over against these we have the empirical work coming under the head of *mental tests*. This latter work is of two sorts: one embracing a small amount of data from each of a vast number of individuals, and the other made up of intensive studies of a very few subjects. A large number of such intensive studies would seem to offer a better basis than can be gained in any other way for a psychology of character or temperament, or for any scientific classifications from the psychological point of view.

But at the outset it may be objected that the differentiæ which mark off types of mentality from each other are not proper subject matter for psychology, that they touch us only on the practical side, and that if we would seek justice to the great synthesis of reality we must look to art. In freely awarding this function to art, as is obviously its due, we do not thereby invalidate the claims of individual psychology. All individual differences of fundamental importance are subject matter for general psychology. Comparative psychology deals with the largest of these differences. Age and sex differences already receive careful attention from most workers. It is only the minor differences—those unessential to science—that psychology is willing to surrender to the domain of art. The contention here made is that over and above these minor differences there are deep and fundamental lines of cleavage among individual mentalities the existence of which is as yet hardly suspected; that in dealing with individual minds we encounter no smaller differences than the zoölogist finds in his own field.

But we have only to compare the relative status of the zoölogist and psychologist to see how the latter has lagged behind. While the zoölogist has no longer any difficulty in stating the essential differences between even such superficially similar animals as the whale and the fish, psychologists cannot agree on the features distinguishing the most widely separated grades of intelligence. And yet there is certainly as much variety in psychical types as in the physical. One important difference is that the psychologist has to deal with facts more hidden from direct observation. The differences, however, when found, are certainly as great in one case as in the other.

This advocacy of a scientific classification does not mean to cast discredit upon the practical classifications that grow out of every-day experience. Far from discrediting classifications that have been found serviceable, the kind of work here advocated would simply follow the example of Linnæus in seeking for more fundamental bases of division.

Such study, moreover, cannot fail to be rich in pedagogical suggestions. Just as the laboratory study of comparative psychology has justified itself both by its suggestiveness for general psychology and for education, as well as from the standpoint of evolutionary theory, so should experimental results gradually replace the "interesting stories" about children. Along the line of mental tests, a few psychologists entertain serious expectations of immediate practical results. Binet, for example, in 1896 expressed the hope that he would soon succeed in devising a series of mental and motor tests which would be so simple that even the ordinary parent could apply them to his child and in an hour or two reach results which would indicate definitely the child's grade of intelligence. Others have recommended such tests as helps for the physician. Simon (17) states, regarding the method of the "copy," "convenient, short, and exact, this copying of phrases constitutes a good method of diagnosing a child's intellectual development at the very moment of the experiment. Kirkpatrick (10) thinks his tests should be of some value to the school superintendent or teacher in settling doubtful cases of promotion. Bolton (2), speaking of the unsatisfactoriness of the ordinary school examination and of the need of replacing it by something more scientific, suggests that "Tests of physical endowment and of general healthiness of body seem to offer the most promise of finding what is wanted." It is implied, also, that in other walks of life such tests will come in to determine fitness to do various kinds of work. Galton long ago remarked that "One of the most important objects of measurement . . . is to obtain a general knowledge of the capacities of a man by sinking shafts, as it were, at a few critical points." Near the close of one of the most important contributions yet made to the subject, namely, that by Spearman (18, p. 277), we have the following statement: "Here would seem to be the long wanted general rational basis for public examinations. Instead of continuing ineffectively to protest that high marks in Greek Syntax are no test as to the capacity of men to command troops or to administer provinces, we shall at last actually determine the precise accuracy of the various means of measuring General Intelligence, and then we shall in an equally positive manner ascertain the exact relative importance of this General Intelligence as compared with the other characteristics desirable for the particular post which the candidate is to assume. Thus it is hoped we shall eventually reach our pedagogical conclusions, not by easy subjective theories, nor by the insignificant range of personal experience, nor yet by some catchpenny exceptional cases, but rather by an adequately representative array of established facts."

It must be admitted that expectations along the line of the above suggestions are little justified by the results already obtained by such tests. The requirements of the psychological laboratory can no more be simplified so as to be met by the ordinary parent or teacher than can those of the physical or biological laboratory. In the light of present conditions, the suggestion recently made by Cattell (4) seems much more reasonable; namely, that there is destined to grow up eventually a large body of psychological experts who will play a rôle in the future as important as that of the medical men at present. The wide and varied usefulness of such a body, supposing them to exist and to be adequately equipped, need not be insisted upon. Psychology can, however, do more harm than good in the educational field and in its other fields of possible usefulness if its results are prematurely applied.

We need not argue the point further. The following study, at least, is undertaken in the faith that psychology and life are not prime to each other, and that even at present some of the common factors may be sought without thereby cheapening either the methods or results of experimental psychology. How extremely little is herein contributed to this end, no one is better aware of than the writer; but he would fain co-operate with the pioneers already at work, and ventures to offer the following account of his experiments for what it may contribute to the choice and evaluation of methods in this comparatively new field.

II. NATURE, PURPOSE, AND CONDITIONS OF THE STUDY.

Studies with mental tests readily fall into two chief classes. On the one hand, (A) are the more or less superficial tests of a large number of individuals. These again are of two sorts: (1) Those which, in sets perhaps of ten to twenty tests, hope to mark off in the space of an hour or two the chief facts in one's whole mental individuality. These are usually made, as has been said, with a large number of subjects and therefore are liable to be hurriedly and roughly executed, and often with the help of half-trained assistants. (2) Such work as that of Spearman, already referred to, which also uses a large number of subjects, but instead of trying to mark off the entire personality aims at testing one or a few traits under very carefully controlled conditions. But all tests of the A group aim at exact quantitative results. They are psychophysical. They must be so planned that they will not allow of several different types of reaction, but so that the results shall present only units of *quantitative* difference. The aim is mathematical correlation, and the individual subject has no place in the interpretation of results.

There is another approach, (B) quite different from the above, aiming more at a *qualitative* analysis of the processes involved. Examples are the work of Kraepelin and his students in Germany, Binet in France, and Sharp and Kuhlmann in America. This method prefers a few subjects carefully studied. It aims to characterize the mental differences among them, hoping in the end to throw light on ultimate problems of psychological analysis. Instead of applying tests which yield an unequivocal *yes* or *no*, or *so much* or *so little*, it may even put problems which allow of widely different attempts at solution, of a number of possible kinds of errors, and of different methods of correcting these errors. General observation is appealed to, and in all respects such work may utilize rougher data than would be possible in purely quantitative studies.

The study to be reported is distinctly of the latter type. It makes no attempt at psychophysical exactness and the establishment of mathematical correlations. The ideal followed is shaped largely by such work as that of Hobhouse on animals and that of Binet in his "Experimental Study of Intelligence."

The fact that the study aims chiefly at intellectual to the neglect of emotional and volitional differences must not be construed as antagonistic to the voluntaristic trend of modern psychology. On the contrary, I believe that the key to an explanation of the intellectual differences I have found lies often in native differences of emotional reaction. The difficulty of the task and the lack of time have kept me to the narrower field.

What value can such a study have for psychological theory? In the first place it should throw some light on the problem of "general mental ability." Is intellectual ability (to adapt the figure of Lloyd Morgan to our purpose) a bank account, on which we can draw for any desired purpose, or is it rather a bundle of separate drafts, each drawn for a specific purpose and inconvertible? Let us review a few of the highly contradictory answers that have been given it.

Ebbinghaus says (5): "Wherever we look we find that mental ability (*Tüchtigkeit*) consists in something similar; only the material changes with which it works. It is the same with the learned man who is able to fill the gaps and explain the contradictions of historical material, as with the artist who elaborates our sense perception through a meaningful conception of the whole, or as with the skilled merchant who makes disposition of his goods in accordance with his means, the needs of the public, and political and social factors." Spearman (18, p. 284), after stating the approximately absolute correspondence which he finds between "General Discrimination" and "General Intelligence," says: "The above and other analogous observed facts indicate *that all branches of intellectual activity have in common one fundamental function (or group of functions), whereas the remaining or specific elements of the activity seem in every case to be wholly different from that in all the others*." Again he says: "As an important practical consequence of this universal unity of the intellectual function, the various actual forms of mental activity constitute a stably interconnected Hierarchy according to their different degrees of intellective saturation."

Perhaps the most outspoken advocate of the opposite view is Thorndike (21). Basing his conclusions on the lack of correlation found between simple tests of the ability to do two or more apparently similar things, he says: "Good reasoning power is but a general name for a host of particular capacities, the general average of which seems to the namer to be above the general average in other individuals." Again, "the most hopeless scholar in one field will in another be not so very far below mediocrity. The discovery of the exact amount of the relationship thus disposes finally of the opinion that brightness is brightness and that those who possess it may use it equally well in any field."

In the last quotation, the controversy takes on the aspect of a dispute between nominalism and realism. To deny General Intelligence on the ground that it is made up of a host of particular abilities whose relative proportions vary from man to man, is like denying the existence of a distinctively human body on the ground that the relative proportions of its parts are not the same for any two individuals. The important question is one of fact and not of name. If an individual takes low rank in every mental performance it is immaterial whether we say his "General Intelligence" is low, or whether we say he is defective in this, that, and the other "particular ability." And there are undoubted cases of individuals who take such universally low rank. As a contribution of fact, then, our study should have some bearing on the question of General Intelligence.

Again, it seems that a comparative study of intellectual differences should throw some light on the relative importance, for intelligence, of such factors as memory, habit, attention, etc., each of which, more or less, is teased out and thrown into relief by the conditions of the study. Nearly every sort of mental operation has been at some time or other singled out by psychologists and set up as the leading element of intellectual ability.

My subjects were specially selected as among the brightest or most stupid that could be found in the public schools within easy distance of Clark University, in the city of Worcester. Three ward principals, by the aid of their teachers, made out a list of about two dozen boys of the desired age, equally divided between the two groups.[1]

These two dozen were selected from about 500 boys. Out of this list, fourteen were found who were willing to come to the University as often as desired for experimentation—seven bright and seven dull. They came singly, or sometimes in pairs (according to the nature of the work), three or four times a week for one hour's work. To be more sure of regular attendance, they were promised a small fee for each visit, to be paid only in case they continued through all the exercises. This, however, would probably not have been necessary, as the confidence of the subjects was easily won, and the exercises were for the most part interesting and also quite out of the routine of their every day school-work. With a few exceptions, mentioned here and there in the results, the subjects gave every evidence of doing the best work they were capable of. Over much of it they were enthusiastic. Several of the subjects showed a good deal of interest and curiosity to know what ones were making the best records, and I had to be careful not to allow information to leak out that would discourage the poorer workers. By generously distributing praise, it was so managed that those whose work was almost uniformly poor never became aware of the fact.

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[1] I am very greatly indebted to the principals and to the teachers as well, for their generous co-operation and particularly for the large amount of information they have given me concerning the school activities of my subjects.

All the work was done in the psychological laboratory of Clark University, except that with *M* and *N*, who spent about two hours at my home three to four evenings out of every week. In conversation and games, other than the tasks given, I had ample opportunity to get well acquainted with all. The trips made to the laboratory were at the following hours: 8 to 9. A. M.; 1 to 2 and 4 to 6 P. M. Altogether, I spent on an average about six hours per day, six days in the week, in personal contact with my subjects, singly or in pairs. This was begun about January 20th, 1905, and continued without intermission until May 10th following.

In making the selection of subjects, the teachers were asked simply for those they considered "brightest" or "dullest," in the ordinary significance of the terms. The only caution given was that their judgment should be based upon the child as a whole, and not simply upon his class work in the school subjects. In doing this it was not expected that the teacher's judgment would be infallible, but it was confidently expected that this method would afford two groups of subjects sufficiently distinct from each other for the purpose of a comparative study of intelligence. In this I was not disappointed. This procedure, however, has been criticised on the ground that the dullard at school often later shows himself efficient in life's activities. Such examples as Sir Walter Scott, Oliver Goldsmith, Patrick Henry, Wellington and General Grant have been frequently cited in support of this. No one would defend the school as a universally efficient test of mental ability, and yet the boy who with best effort cannot solve the school problems, who cannot master an ordinary vocabulary in his mother tongue or apply the simple rules of grammar, who sees no meaning to historical or scientific facts after honestly trying to comprehend them, is not likely to be distinguished later as a man of intelligence. In some cases, closer investigation shows that the poor school standing imputed to many famous men has been exaggerated or partially reported. And, finally, what the present paper is concerned with is the testing of boys now considered bright or dull, without reference to their future development.

In the beginning, then, we do not define "brightness" or "dullness" any more definitely than does the world in general. The aim was to secure subjects whom most people would readily agree in classifying one way or the other, and then proceed to the investigation of what constitutes the fundamental intellectual differences between the two groups. A large number of such studies ought to end by giving us a definition of terms. At present, such definitions are lacking.

A more specific criticism might be made on the ground that a good deal of my work was carried on at an unfavorable part of the day, particularly that between four and six in the afternoon, after the close of the school day. That this may have affected the results to a certain extent cannot be denied, but that it did so to any considerable extent is unlikely. First, because the afternoon session in the Worcester schools is less than two hours in length; second, because my experiments were for the most part interesting to the subjects and quite different from the routine of school work; and third, most important of all, because past experiments indicate that a short, interesting, mental task, given to pupils who are undoubtedly fatigued after a day of school work, does not give serious indication of the presence of such fatigue. Moreover, the afternoon subjects were equally divided between the two groups in order that the relative standing of the groups might not be affected. In passing, it may be noted that my best subject did his work between 4 and 5 P. M.

Perhaps the most unfavorable element in the conditions of the experiment is the age difference. The ages of the subjects when the work was begun were as follows:

BRIGHT GROUP (I).

A	B	C	D	E	F	G
10 yrs. 2 mos.	11 yrs. 1 mo.	10 yrs. 10 mos.	10 yrs. 5 mos.	10 yrs. 8 mos.	10 yrs. 7 mos.	11 yrs. 5 mos.

DULL GROUP (II).

H	I	J	K	L	M	N
13 yrs. 5 mos.	10 yrs. 4 mos.	10 yrs. 9 mos.	10 yrs. 11 mos.	12 yrs. 5 mos.	11 yrs.	13 yrs. 9 mos.

It is practically certain that our results are not exactly what they would have been if there had been no age discrepancy. It should be noted, however, that excepting *N*, *H*, and *L* the greatest age difference is fifteen months. And if we also except *G* and *A*, the greatest difference is only nine months. *B*, *C*, *E*, *F*, *J*, *K* and *M* are within six months of each other. It must also be noted that the largest age differences are so distributed as to give the advantage in maturity to the dull group. Such intellectual distinctions between the groups as do appear will therefore be more significant than they would have been if the age advantage had been on the other side; and somewhat more significant than if there had been no age difference at all.

It need only be stated at this point that the home life and general experience of the subjects present no very marked extremes. None were from extremely poor families or gave evidence of lack of nutritious food. They were all from respectable, middle-class homes, though of course showing different degrees of culture and refinement, to be noted in the general observations. (Section XI, below.) All the subjects live in one of the best portions of the city which, as a whole, is uncrowded, clean and generally devoid of squalor. They have had as nearly the same sort of school training as one could expect from pupils of a given district of a given city. I think it may be stated that in general the environmental conditions have been favorable to the study.

The ability of the fourteen boys above described was subjected to tests at eight more or less different points, to wit: (1) their powers of invention and creative imagination; (2) their logical processes; (3) their mathematical ability; (4) their mastery of language; (5) their insight, as shown in the interpretation of fables; (6) their ease of acquisition, as shown in learning to play chess; (7) their powers of memory; and (8) their motor ability both in general and in the acquisition of bodily skill. The tests upon each point were numerous and varied but constituted a connected group. The details with regard to the particular tests of each group and the results obtained will be found in the eight sections next following.

III. INVENTIVENESS AND CREATIVE IMAGINATION.

Before taking up the experiments concerned with these processes let us consider for a moment their general scope and nature.

What do we mean by invention? Otis T. Mason defines it as "every change in human activity made designedly and systematically" (14). According to this broad definition, invention is the typical intellectual activity, being involved in the creation of language, in art, social activities, and philosophy. We have only to compare the negro with the Eskimo or Indian, and the Australian native with the Anglo-Saxon, to be struck by an apparent kinship between general intellectual and inventive ability. Mason calls the great inventor an "epitome of the genius of the world." Bain also (1, p. 337) points out that the great inventors are men of scientific calibre and that the greatest of experimentalists are inventors. Paulhan (16) goes so far as to say that the inventions of the poet and artist do not differ at bottom from those of the scientist and philosopher. Mach (13, p. 174) quotes approvingly a saying of Liebig to the same effect, and adds that "if it is the business of the artist to build up his work from a few motives, it is the task of science to discover the motives which permeate reality." Likewise Mach asserts that the mechanical engineer is exercising much the same activities as the scientist, except that the riddles of the latter have more unknown terms and are less definitely put. According to this view, to develop a dog from a wolf, a Krag-Jorgeson from a bow and arrow, a lucifer match from the primitive fire stick, has involved much the same activities as have been operative in transforming fetichism and magic into religion and philosophy, or scattered knowledge into science. This theory derives a certain plausibility from the fact that mechanical inventions have grown up *pari passu* with the development of such great concepts as cause, number, time, space, etc. They have kept pace roughly, also, with the development of the arts, philosophy, science and religion. Such a parallelism in development is most easily explained by supposing the two phenomena dependent to a certain degree upon the same sort of mental processes, though doubtless many other factors are involved.

However this may be, it is clear that invention is largely dependent upon constructive imagination, the ability to abstract from present experience and picture new situations, their possibilities and their consequences. In both, images are united intentionally in order to form a new combination. It is imagination which invents. Reason is only a mode of control and justification. It determines values, accepts or rejects, but must get its raw material from creative imagination. Conjecture, which is only another name for the same thing, is at the basis of the most diverse scientific inventions. All sciences begin with hypotheses. All this means also the ability to profit by experience, to sift out the useful element from a manifold, to bring the past to bear upon the future, to join elements previously isolated.

It is reasonable to suppose that the decisive intellectual differences among men are not greatly dependent upon native retentiveness or mere sense discrimination. Far more important than this mass of raw sense data is the correct shooting together of the sense elements in memory and imagination. This is invention. It is the synthetic or apperceptive activity that gives the "seven-league boots" to genius. It is a kind of ability that all great minds exhibit. Why so great spontaneous relating activity in one mind and so little in another, is the ultimate problem in this portion of individual psychology.

The opposite of invention is not imitation, but routine. The absence of routine implies often a certain disequilibrium, a mental activity irregular and perhaps uncoördinated. It is a breaking up of preferred associations. We may think of it as due to a nervous ferment, for it is in point of fact augmented by certain maladies, as phthisis and alcoholism. (16, p. 167.)

We have above presented the view that at bottom all invention is one and the same thing. We are able, nevertheless, to mark out three sorts of inventive genius that differ somewhat from each other. They are, first, *mechanical* invention, involving a type of creative imagination that is exact, clear, objective, concrete, with little of the affective element. Second, *artistic* invention which is more emotional, subjective and romantic. Its imagery is somewhat less perceptual or concrete than that of mechanical invention, and it is more characteristic of dreamy and myth-making minds. Third, *scientific* and *philosophical* invention, whose imaginative constructions are conceptual, schematic, abstract. This corresponds to Ribot's three-fold division of the creative imagination.

It is probable that these three sorts of invention look more alike from without than from within. That is to say, while much alike if viewed objectively, they have each a peculiar affective tone that will make success in one a hindrance to success in another. It is partly interest that makes one revel in one kind and apathetic toward another. In embryo they show more similarities, but diverge rapidly as tastes and interests become set.

In the tests about to be described ten problems or puzzles were given. In some, the puzzle aspect was largely removed by the statement of the problem or by a hint given in such a way as to help the subject over the portion that might otherwise be thought to render the problem a "catch." The purpose of these problems was two-fold. In the first place, it was expected that they would throw light on the differences in constructive imagination and the entire complex of activities that generally go under the name of invention. In the second place it was hoped they would reveal any differences that existed in the stage of development of the logical processes among the subjects. It was expected that such differences would show themselves in the methods of solution, the lower grade subjects adopting more the "method of trial and error" and giving more evidence generally of perceptual thought as opposed to conceptual. The last three are especially adapted to this end.

It may be objected that such problems as we have described below do not test real intellectual ability, but only a spurious kind which would better be denominated ingenuity, Yankee shrewdness, the *entrepreneur* spirit, or the ability which enables one "*se tirer d'affaire*." Without defending the thesis that such mental traits as are here called into play are faithfully indicative of mental ability in general, we may yet hold that they are so to a certain extent. Such, in the opinion of a recent writer, are the very qualities most necessary for the scientific research student. In the words of Professor Henry Shaler Williams (23), "The underlying principle of scientific research is simple inquisitiveness; that trait so characteristic of the Yankee and the fox. I use the term Yankee as the name for the smart, shrewd, inventive man, who depends upon his own resources, and if without learning or education, still succeeds in penetrating untried fields and in making headway under all manner of reverses, hindrances and difficulties, always exhibiting a quickness to observe differences and to interpret the meaning of things. All kinds of successful pioneers are made of such stuff." This trait of adaptability to environment would seem to constitute an important distinction between the higher and lower races. The Papuan is indigenous, the European is cosmopolitan.

All this, again, is in close harmony with Janet's recently expressed theory of brain levels. The three levels of Hughlings Jackson are replaced in this theory by five levels, the highest of which is not that concerned with conceptual and abstract thought, but the one that controls adjustment to immediate environment. With this highest level defective, one may be ever so learned and yet lack the chief elements that go to make up what the world regards as common sense. If the problems here presented appear trivial, it is due to our conventional modes of thought. In order to heighten our respect for even the slightest inventive genius we have only to glance at the slow and laborious processes in the development of all inventions. Engrossed in routine thinking for so long, most of us have lost our appreciation for naïve bits of originality. The book learning of the average educated man gives to his thought a routine and conventional setting that causes him to lose perspective. Such a person, struggling for university degrees and trying to master the current concepts of philosophy or science, begins after a while to fancy that his own sort of mental activity is of higher quality than the mechanic or artisan is engaged in.

Below is a statement of the first six problems, together with a description of the conditions and results for each. The other four will be considered in the following section on the Logical Processes.

Problem 1. A man has five short chains of three links each.

Show how he can put these five pieces together into one long chain by the use of only three weldings.

Conditions. The five pieces, made of small wire, were laid on the table side by side in front of the subjects. Care was taken to see that they understood what was wanted, after which they were asked to put the chains together. The problem offers two convenient places for assistance in case of failure. If the subject failed to discover within ten minutes that three links of one piece must be used as connecting links (as is necessary), then I opened such links and placed them before him near the other pieces. In most cases this hint was sufficient. When it was not, further help was given by placing the three open links in the proper positions.

Results. As given at first the problem may not be thought fair. The first point is really difficult to see. Only *D* and *L* were successful without any help, *D* within 30 seconds and *L* at the end of 4½ minutes. All the others, therefore, were assisted by my opening the three proper links. Thereupon *B*, *C*, *E*, *G* and *N* proceeded at once, within 30 seconds, to unite the other four pieces by means of them. *H*, *J*, and *K* also succeeded but only after further trials and errors, using 4, 2¼, and 4¾ minutes respectively. For *A*, *M*, and *I* the three links were not only opened but also placed in their proper positions between the pieces. Even then *A* and *I* did not get the idea, but continued fastening the links apparently without choice. Both failed in the 30 minutes allotted.

Of group II only *L* and *J* showed any noticeable tendency to study out the situation without actually placing and fastening the chains, while all the better group except *A* did so. In general, the attempts of group II were more rapidly made and the successive variations more trivial than those of group I. For example, if the first procedure was by fastening piece one to piece two and then to piece three, etc., the next attempt was likely to be by fastening one to five. That is, the essential point in the error was not grasped. Some in group I also started out in some cases with little more rationality, but with the exception of *A* they did not repeat an error so often in the same or slightly different form as did the boys in group II.

Problem 2. Fifteen matches were placed on the table so as to form the figure shown on the next page:[1] The subjects were asked to remove three matches and leave exactly three squares.

This test gives room for a certain amount of rational procedure. It is decidedly more rational to cast the eyes about to see what squares should be retained than simply to pick up three matches at random and then look to see whether three squares are left. Casual inspection will show that certain of

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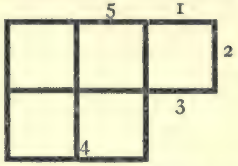
[1] Used by Miss Thompson: Mental Traits of Sex. Chicago, 1903. p. 111.



the matches, *e. g.*, 1, 2, 3, 4, etc., must remain. The eye must run over the figure rapidly to see what portions offer the most promise. Rapid combinations of different squares must be made. Certain matches must be thought out of existence.

Results. No one of group II succeeded in the 10 minutes allotted. *E*, *B*, and *G* of group I were successful in 3½, 2 and 5¼ minutes respectively. The other subjects were assisted at the end of 10 minutes by having match 5 removed for them. *M*, *L*, and *N* finished in 2, 2¼ and 3 minutes respectively. The other four stupid subjects *H*, *I*, *J*, *K*, failed in the additional 5 minutes given. Of the remaining bright subjects, all succeeded: *A* in 4½ minutes, *F* in 3¾ minutes, *C* in 2¼ minutes, *D* in 4 minutes. The tendency in general was to try matches that were adajacent or opposite. Only *E*, *G*, and *B* gave evidence of choosing squares rather than individual matches. It was also noticeable that of group II only *L* and *M* gave evidence of making any attempt other than by actual removal of matches, while all of group I, except *A*, did so. None of the subjects attempted a logical, mathematical solution like that suggested by Miss Thompson.

Problem 3. A man travelling with a fox, a goose, and some corn comes to a river. He can only take one over at once. If he leaves the fox and goose together, the goose will be eaten. If he leaves the goose and corn together, the corn will be eaten. How can he mange to get them all safely over?

Conditions. The subject was provided with small wooden blocks of different shapes representing the different objects. These he carried over a book (representing a river) to demonstrate the solution. To solve this puzzle alone rquires a good deal of ingenuity. The important idea, of course, is that of carrying the goose back. This is in the nature of a "catch," and did not occur to any of my subjects. After 10 minutes of unsuccessful trials it was explained that it would be allowable for the man to carry any of them over and back again if he cared to do so. Five minutes more were then allotted. In case of failure again, they were then instructed that the goose was the proper one to carry back.

Results. None of the subjects were successful without assistance. After the first bit of instruction, all but *E* of group I, and *H* and *J* of group II were successful. The remaining ones were successful after the second bit of assistance. It is interesting to note how quickly the pupils learned that the solution must begin by the man carrying the goose over. This is the first essential point, and was seen at once by all except *E*, *I*, *K* and *N*. These continued their false starts for some time even after they had been found to lead to failure. The ingenious, "smart" suggestions nearly all came from *J*, *K*, and *M*. Some of these are as follows: "separate them on the opposite bank," "hurry back before the fox can eat the goose up," "let the fox swim over," "call the fox over," "put the corn in his pocket," "throw the corn over," "hide the corn," "tie up the fox," etc. This may signify a greater difficulty for these subjects in comprehending the conditions of the problem, or a greater aversion to making any serious effort at doing so.

Problem 4. Two boys and two men are travelling and come to a river which has no bridge and is too deep to wade. None of them can swim. They find a small boat which will carry two boys or one man. How can they manage it so that all may get over?

Conditions. The subjects were given a toy boat and blocks representing boys and men. Each was allowed to keep trying not only till successful but till the process was completely learned and could be gone through without error.

Results. The following shows the time in minutes spent by each subject in actual trials before all the errors were avoided. Time spent between successive trials is not counted.

GROUP I.

A	B	C	D	E	F	G
7.27	1.36	1.58	2.20	5.41	x	5.25

GROUP II.

H	I	J	K	L	M	N
1.15	9.25	5	10.33	2.45	9.27	17.47

The total number of errors for group I was 35, distributed among six subjects (*F* was not tested), *A* and *E* being responsible for 20 of them. For group II there were 87, *K*, *M*, and *N* having 61.

The most frequent error in both groups was that of a man going over and coming back at once, and the next that of a boy going over alone.

The following shows the number of trials made by each subject before all errors were avoided.

GROUP I.

A	B	C	D	E	F	G
6	1	3	3	5	x	1

GROUP II.

H	I	J	K	L	M	N
2	8	5	14	3	8	10

After the subject had learned the moves using the blocks he was told to close his eyes and describe the necessary moves orally. All were able to do this without hesitation except *M*, who made several errors.

Thereupon the subject was allowed to close his eyes while I named the moves orally. Then I would stop suddenly and have him state the situation resulting from my instructions. *I*, *K*, and *M* had great difficulty in this, being able to follow only short, simple moves.

There are several factors that make for success in this problem. The effect of various possible moves may be pictured in advance by imaging the blocks in other positions than those which they occupy. It may be objected that even the subjects able to do this will not do so, but rather depend on lucky moves to bring it around all right in the end. It is true that in some cases boys of group I do begin with haphazard moving. But the significant fact is that they abandon this procedure after a few moves for one which is more rational. Instead of making a trial and letting the result tell whether it is correct, they try to foresee what will result from a contemplated move.

It may be objected also that a subject may be successful simply because of making a lucky move early in the test and then repeating it mechanically. But here is an important point. Certain of the subjects, when successful by accident, stopped to find out the cause of the good fortune. Certain others went on repeating the old errors or making new ones. The table shows the marked inferiority, generally speaking, of group II on this test. But in no case was the procedure entirely haphazard. Even the poorest cases, as a rule, began by taking over two boys. The most obvious possible errors were hardly made at all. This partial avoidance of the trial and error method shows that the subjects were really employing their intellectual capabilities in solving the problem. Whether they were doing so to their utmost, it is impossible to determine.

After solving the above problem the subjects were asked to show how seven men and two boys could get across the river in this same boat. All were successful at the first attempt except *H* and *K*, who succeeded on the second trial. *B*, *G*, and *C* volunteered the information that any number of men could be taken across that way.

Problem 5. A mother sent her boy to the river to get four pints of water. She gave him only two vessels, one holding three pints, the other five pints. The boy must bring exactly four pints, no more, no less. How shall he measure it?

Conditions. The subject was given vessels of the proper sizes and taken to the tap to demonstrate the solution. In order to avoid all unfairness it was explained that the boy would be allowed to pour water from vessel to vessel as much as he desired. Since the measuring may be begun by filling either vessel first, uniform conditions were secured by instructing each subject to begin with the three pint vessel. There are then the following steps to go through: 1. Fill the three pint vessel and empty it all into the other. 2. Fill the three pint vessel again and empty out two pints by filling the other full. 3. Empty the large vessel and use it to save the one pint remaining in the small vessel. 4. Fill up the small vessel again.

In case of failure at the end of 10 minutes the subject was reminded of the two pint space left in the large vessel after the three pints had been put in. Then if unsuccessful after ten minutes he was carried through step 2 above. If unable to proceed after ten minutes more, step 3 was given.

Results. None succeeded without assistance. *B*, *D*, *G* and *J* were able to proceed after being simply reminded of the two pint space. *H* and *L* were able to work out the last two steps alone while all the other subjects were able to get only the last step. Although it was very carefully explained that guessing would not be allowed and that the water must really be measured, nevertheless certain of the subjects could not be made to omit it. By "guessing" is meant any attempt to get a particular amount without actually measuring it. *A*, *E*, *I*, *K*, *M* and *N* were especially prone to this procedure. When one sort of "guessing" was forbidden they would try another. *B*, *D*, *F* and *G* refrained from it after being reminded once or twice. Generally speaking, the subjects of group II made far more useless trials than did those of group I.

The problem, considering the assistance given at the beginning, is entirely fair and gives room for a good deal of ingenuity. A distant end must be kept in mind and various possible combinations tried in order to see whether they further this end.

Problem 6. The subject was given six pennies and told to arrange them in two rows of four pennies each. If not successful in 10 minutes he was told that it was allowable to place one penny on top of another if he cared to do so.

Result. *F* and *J* were successful without help. The others failed in the 10 minute period and were given the above mentioned assistance. Thereupon all succeeded within five minutes, except *A*, *M*, and *N*. With this puzzle, group I made many more trials than group II. *A*, *C*, and *G*, especially, made their combinations very rapidly, while *F*, *J*, *K*, *L* and *M* made few trials.

Constructive imagination in Chess. The details concerning the chess test are given in Section VIII, but since ability to plan the game is closely associated with invention and constructive imagination I have incorporated the ranking in chess playing with the ranking for the tests of this section in Table I.[1]

TABLE I.

Grading and Ranking of Subjects on Tests of Inventiveness.

Problem.	1	2	3	4	5	6	Chess.	Composite Ranking.
A	5	2	2	4	3	1	3	10
B	2	1	1	1	1	2	1	1
C	2	2	1	2	2	2	2	4
D	1	2	1	2	1	2	3	3
E	2	1	2	3	3	2	3	9
F	3	2	2	3	2	1	3	7
G	2	1	1	1	1	2	2	2
H	3	3	1	1	2	2	3	5
I	5	3	2	4	3	2	4	11
J	3	3	1	3	1	1	4	7
K	3	3	3	5	3	2	5	13
L	1	2	2	2	2	2	4	5
M	4	2	3	5	3	3	5	14
N	2	2	2	5	3	3	4	11

Table I gives a summary of the results of Section III so far as they concern the relative ability of the individuals tested. The method employed was to assign to each boy a grade on the scale of 3 or of 5 as the precision of the test permitted, 1 being the highest mark. The composite ranking is calculated by summing the grades given for the individual tests and assigning a new mark in accordance with the sums obtained, the rank 1 being assigned to the boy having the lowest total, and so on. In case the sum of the grades for the individual test turned out the same for any two boys, both were given the same rank and the next rank number was omitted altogether. In Table I, for example, *H* and *L* are both ranked 5 in the composite ranking, and rank 6 is omitted; in the same way *F* and *J* are ranked 7 and the rank 8 is omitted.

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[1] That our puzzle-problems really did involve constructive imagination is indicated by the close correlation found between the rankings that they give and that for chess, which involves the latter in a high degree.

On the basis of this table we are able to throw our subjects into five groups according to their inventive ingenuity (of the mechanical type). 1. *B* and *G*, who are almost uniformly good. 2. *C*, *D*, *H* and *L*. 3. *E*, *F*, and *J*, who are rather irregular. 4. *A* and *N*. 5. *I*, *K*, and *M*, who stand distinctly lowest.

The second and third kinds of invention have barely been touched by my experiments, but several important points have come out incidentally. For example, as mentioned elsewhere, *C* is distinctly of artistic temperament, with a passion for drawing and painting and a marked liking for works of fiction. *N* belongs to the lively, imaginative, unstable type of stupidity distinguished by Kraepelin from the dull type. *L* is somewhat of the same type but less distinctly so, and frequently rises out of the stupid class. *H*, *I*, *J*, *K* and *M* approach Kraepelin's dull type, and show little invention of any kind. *B* and *G* show the highest development of the power in question. Their inventive ability belongs rather to the mechanical sort.

As a group, the duller boys make many trials with slight variations and do not study the situation before attacking it, both of which characteristics testify to their feeble ability to present to themselves anything beyond what actually lies before them. They tend, like the animals, to live in a world of immediate sense experience.

Well chosen puzzle problems seem to the writer to furnish a satisfactory general test for imagination of the every day practical sort. It is clear, however, that subjects of good ability may fail in one or two special cases, and subjects of poor ability succeed, so that the test should be carried out with a sufficiently varied assortment of similar problems. The tests throw much light also on methods of logical procedure, and will be considered in this respect at the close of the next section.

IV. THE LOGICAL PROCESSES.

The second series of puzzles was devised to throw light on the degree of development of the logical processes, to get at differences in methods of mastering intellectual difficulties.

No doubt the broad outlines of this phase of mental development are familiar to the reader. It is a matter of common information that the lowest forms of life profit little or not at all by experience, and that the ability so to do has been generally agreed upon as the best criterion of a conscious life. The classic example of Möbius's pike may be taken as representative of the next higher stage. The pike ceases his efforts to devour the small fish after he has half killed himself by bruising his head against the plate glass that separates them from him. He also leaves them undisturbed even after the partition has been removed. No other adaptability is shown. In other words we have an example of associative memory, but one very difficult to stamp in.

The higher animals, such as the rat, or monkey, show vastly increased ability to reach a desired end through memory of success and error. The problem is attacked in a haphazard way until accident brings success. If rational processes were very effective here the animal would look about for the cause of his success and thereafter avoid error and discard superfluous movements. As a matter of fact this is not the case; errors and useless movements are eliminated only gradually and in proportion as the successful activities become more firmly grounded in neural structure as habit. The typical curve of learning, then, by the "trial and error method" is one of *gradual* descent. This is the sort of learning characteristic of animal intelligence.

The logic of the learning processes in children has been studied experimentally by Hodge (7), Lindley (11), and Kinnaman (9). They show that the methods of young children in approaching a problem are essentially like those of the rat or monkey, namely a series of haphazard trials, a lucky accident, and gradual elimination of the useless efforts. But a significant fact is that the curve presents a steeper descent than is the case with animals. Error may be repeated, but not so often. The work of Lindley shows that at about the ages of ten or twelve the "trial and error method" is giving place to a more rational procedure. "The lack of circumspection, the conventional beginnings, the automatic repetition of former movements, the slight and inconsequential variations, the frequent relapses into routine after failure of a slight variation, in short, the general tardiness in profiting by errors, of children of grade III, slowly makes way in older children for greater prevision, more adequate analysis of design, less conventionality and automatism in procedure, more radical reconstruction of plans in successive trials, all of which leads to greater promptness in profiting by mistakes." (11, p. 469.) Kinnaman's experiments show a similar improvement in the adult as compared to the child. They are able, also, to learn by the experience of others as well as by their own.

But we need not break off our comparison at this point. Adults themselves show the greatest differences in this respect. The noted inventors and the experimentalists have shown ability to profit by error and happy chance far surpassing that of the ordinary person, intricate errors often being second in importance only to truth itself. For the scientist, negative results may be almost as valuable as positive. The history of invention is a record of success built upon failure.

To sum up the course of development just traced, we may follow the example of Mezes (15) and lay down three tolerably well defined stages. 1. "Trial and error." 2. Action that is purposive, but not chosen. 3. Action that is purposive and chosen. To animals Thorndike grants the first only, and asks us to close the question on his decision. On the other hand, Hobhouse seems to prove that certain animals, at least, partake of the second grade. No one, however, would ascribe to them the third sort. As pointed out by Mezes, they may know that a certain action produces a certain result, but not why. They do not scrutinize a situation with a view to discover the best mode of procedure. "They do not even ask *double* questions, still less *general* ones." The reasoner, morever, breaks up a problem into its parts, while the monkey, the child, or the stupid man deals with it as a whole and is soon balked. The reasoner hunts for his error, the animal only knows that the trial was unsuccessful; it does not ask why. Our fourteen boys present a tolerably long scale of differences in this particular.

The following is a summary of the results gained with them from the four puzzles bearing upon this question.

Problem 7. A ball is lost in a round field. The grass is so tall that you can only see ten feet on each side of you. Show what path you would take in looking for the ball.[1]

Results. The subject was given pencil and a piece of paper on which was a circle to represent the field. They fall, according to procedure, into four groups. 1. Those who began at the circumference and circled round and round spirally to the center. This includes *C*, *E*, *F*, *G*, *H* and *L*. 2. *B* and *A* began at the edge and marked across from side to side in parallel lines until the whole field was covered. 3. *K* and *N* marked out a path that resembled somewhat the shape of a wheel with spokes, but was more irregular. 4. *D*, *I*, *J* and *M* ran the pencil about apparently at haphazard until the whole circle was marked over.

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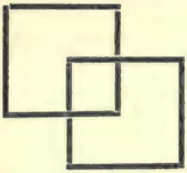
[1] This problem is borrowed from Dr. C. F. Hodge.

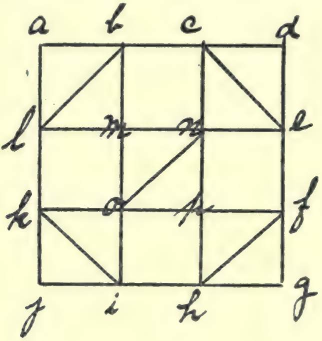
Problem 8. Trace the following figure without crossing a line, lifting the pencil, or tracing any part twice.



Results. A, B, C, D, E, F, H, K and *L* succeeded the first trial, *G, I, M* and *N* the second trial, and *J* the fourth.

The solution, of course, is very simple and cannot be missed if the tracer looks at all ahead of his pencil. It will be noted that only one of group I, but four of group II, failed at the first attempt. This may reasonably be interpreted as indicating a greater tendency in the stupid subjects toward what has been called perceptual thinking. Instead of the action being governed by an end, each stage of the process is motivated mechanically by the preceding stage.

Problem 9. Trace the following figure without lifting the pencil and without retracing.[1]



The following table shows the time, the number of trials, and the starting places for each subject.

Subjects.	A	B	C	D	E	F	G	H	I	J	K	L	M	N
Number of trials,	7	6	5	2	11	10	3	4	8	12	11	13	4	3
Time in minutes,	30	17	21	6	38	53	7	8	30	41	23	37	28	8
Starting points in order,	a g a g c g n	j j i j j o	b a a d n	j n	e g g h i i i i i i o	e d c d d d i i a n	h a o	a j k o	j a d a g a a n	a l p p g a b a a p p n	j f f f f i f f f l o	a a a a a a a a a a a n	a a a n	j j o
Grade on scale of 3.	2	2	2	1	3	3	1	1	2	3	3	3	1	1

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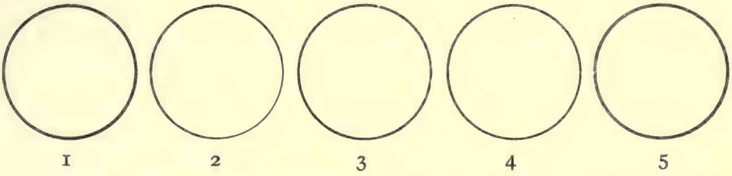
[1] Taken from Lindley: A Study of Puzzles: *American Journal of Psychology*, July, 1897, p. 461.

The table shows very frequent repetition of the same error in subjects *E*, *K*, and *L*. Out of the total of 44 trials for the bright subjects there are possible 37 changes of starting point. 21 changes were made—a percentage of 56+. The percentage of change in starting point was only 39+ for the stupid group. This difference corresponds to that found by Lindley between young and older children. In general my results on this test are so similar to age differences found by Lindley that we need not describe them in detail. They may be summed up by saying that subjects who did best showed less repetition of errors, and a tendency to make variations of a more radical nature, when at all. I may say, however, that the groups fell less radically apart in this test than I had anticipated.

Problem 10. Five circles were marked out thus on cardboard:



Black checker-men were placed on 1 and 2, and white ones on 4 and 5. The problem is to make the black and white men exchange positions. A piece may move forward one step or

TABLE II.

Times, trials and relapses with problem 10.

	Five circles.			Seven circles.			Nine circles.			Eleven circles.			Thirteen circles.			Grading on scale of five.
	Time.	Trials.	Relapses.	Time.	Trials.	Relapses.	Time.	Trials.	Relapses.	Time.	Trials.	Relapses.	Time.	Trials.	Relapses.	
A	3+	5	0	21+	36	2	No further trouble.									3
B	1+	3	0	1+	3	1	No further trouble.									1
C	7+	28	4	2+	6	1		5	0	No furth. trouble.						3
D	4½	10	1	6	7	1		3	0	No furth. trouble.						3
E	1⅓	4	1	16	25	2		2	0	No furth. trouble.						3
F	2	6	0	9¾	15	0	No further trouble.									2
G	4+	11	3	1½	2	0	No further trouble.									2
H	16+	30	4	19+	50	5		11	4		4	1		3	0	5
I	6+	12	3	11+	16	1		4	0		13	3	No trouble			4
J	15+	34	5	7+	19	2		24	5	No furth. trouble.						4
K	17+	28	7	12+	18	3		13	3		2	0		2	0	5
L	14+	22	4	21	26	6	No further trouble.									3
M	49	24	6	32	35	6		16	2	No furth. trouble.						4
N	3+	6	1	30	42	5		8	2	No furth. trouble.						4

jump over one piece, but cannot move backwards. After the solution for this was learned, seven circles were given with three men at each end. Afterward, nine circles with four men, then eleven circles with five men, then thirteen circles with six men at each end. As in all the other tests, record was kept of every move. The table above shows the chief facts in the results.

Time is represented in minutes. It was not kept for the nine circles trial, or those succeeding. Number of trials means the number after which no error was made for five successive trials. The number does not, however, include these five final and successful trials. By "relapse" is meant falling back into error after having been successful.

The above table shows in a striking degree the difference in the ability of the boys in grasping and generalizing the essential features of a method of procedure.

The following is my estimate of the composite ranking of the boys for the tests on the degree of development in logical procedure.

GROUP I.

A	B	C	D	E	F	G
5	1	3	6	8	4	2

GROUP II.

H	I	J	K	L	M	N
10	12	13	14	7	11	9

As before, *E* and *L* tend to depart from the group to which they were originally assigned.

Taking into consideration the whole group of ten problems—those described in the previous section as well as those just considered—we may say that the boys of the better group showed not only superior power of imagination but also a stronger tendency to psychical economy; they used their eyes instead of their fingers; or, going still further in the same direction, they experimented mentally instead of by actual manipulations; they studied things out before they began to operate; they tended to abstract from the particular problem and to announce general rules. When, as often happened, they began in a haphazard manner, they more quickly eliminated their errors, and in adopting new lines of procedure chose them less at random. They were at times interested to seek the causes of their successes. In general, the more poorly endowed may be expected to make more trials than the better endowed; but in a case where no clue presents itself readily, as for example in the case of Problem 6, and the better endowed are brought down also to the fumbling stage, the latter will probably be found to make the greater number of attempts. *B* and *G* showed the greatest advancement in logical procedure, abstraction, general range of knowledge and interpretation of it.

These problems, with perhaps the exception of Problem 8, seem well suited to their purpose. The last is eminently adapted for bringing out differences in degree of rationality of procedure. In several respects it is the most significant of the puzzle problems.

V. DIFFERENCES IN MATHEMATICAL ABILITY.

Ethnology shows that racial progress has been closely paralleled by development of the ability to deal with mathematical concepts and relations. Child psychology shows the same for individual development. This parallelism hinges on the importance of abstraction as a kind of intellectual short-hand. Without it we are helpless in mathematics and all else.

It was thought advisable, therefore, to investigate pretty closely the mathematical ability of my subjects. Eight sets of problems were given, involving more or less different phases of mathematical ability. Following we have a statement of the sorts of problems and a brief summary of the results with each sort.

1. *Mastery of the fundamental processes.* Fifteen problems were given, such as the following:

I. (1) $2 + 2 + 2 + 2 - 3 - 2 + 3 = ?$
(2) $3 - 1 + 2 + 1 + 5 - 2 - 1 = ?$
(3) $1 + 4 - 2 + 4 - 1 - 1 + 2 = ?$

II. Fifteen slightly more difficult, such as

(1) $4 + 6 - 3 + 8 + 2 - 4 - 3 = ?$
(2) $5 - 4 + 8 + 3 - 6 + 5 - 2 = ?$
(3) $7 + 2 + 3 + 3 - 5 + 2 - 4 = ?$

III. Fifteen, of which the following are samples.

(1) $2 + 3 - 1 \times 2 - 3 + 1 \div 2 = ?$
(2) $4 - 2 - 1 + 3 \times 3 - 3 \div 3 = ?$
(3) $1 + 6 - 2 \times 3 - 5 \div 2 - 3 = ?$

Conditions. As in most of the other work, the subjects were taken singly. The problems were read aloud by me at a uniform rate and the subject called out the answer aloud.

Pencil and paper were not allowed. Ten seconds were taken for reading each problem in the first list, twelve for the second list, and fifteen for the third. Full records were kept of the time required for answering each problem.

Results. Wide differences appear, generally speaking, between the two groups. The subjects may be classified as follows: *A*, *B*, *C*, *E*, *F* and *G* made no more than three errors out of the 45 problems and omitted none at all. *D* and *L* either omitted or answered incorrectly 6. *H*, *I*, *K* and *N* omitted or answered incorrectly between 10 and 16. *J* and *M*, 26 and 29 respectively. As to *time* required, *A*, *B*, *C*, *D*, *E*, *F*, *G* and *L* gave their answers with practically no delay; *H*, *I*, *J*, *K* and *N* with delay usually of 5 to 15 seconds; *M*, 30 to 50, seconds.

2. *Fractions.*

(1) Ten problems such as: What is ½ of 8?, ⅓ of 12?
(2) Ten such as: What is ⅓ of 18?, ¼ of 20?
(3) " " " " " ⅔ of 8?, ¾ of 16?
(4) " " " " " ⅓ of 16?, ¼ of 19?
(5) Five " " " " ⅔ of 31?, ¾ of 11?

Conditions were the same as in the former problems; I read the problem, the subject gave the answer without the aid of pencil or paper. *Results.* *A*, *B*, and *G* were able to solve all the different kinds of problems given, and gave incorrect answers to no more than 5. *F*, *D*, and *L* were unable to solve those of the last list, and gave between 1 and 4 incorrect answers in the other lists. *E* and *C* could not solve those of the last list and missed 10 and 16 respectively among the others. *H*, *N*, and *I* could solve none in the last two groups, *K* and *J* none in the last three, and *M* could do nothing with any after the first group. According to *time* we have, four distinct groups. 1. *B*, *F*, and *G* very quick. 2. *A*, *D*, *L*, *E*, *J*, *C* distinctly slower. 3. *H*, *I*, *N* and *K*. 4, *M*, by far the slowest of all, his average time for the simple problems of the firsr list of fractions being more than 18 seconds.

3. *Changing money.* Twenty problems were given, such as the following. How much money should I receive if I buy an article that costs (1) 35 cents and I give the clerk 50 cents?
(2) 14 " " " " " 25 " ?
(3) 69 " " " " " $1 ?
(4) 40 " " " " " $1 ?

Results. *A*, *B*, *F*, *G*, *N* were correct in all cases. *D*, *E*, *L*, *C* and *H*, answered incorrectly two to four times each. *I*, *K*, *J* and *M* answered incorrectly between six and ten times. As to *time*, five groups are readily distinguishable. 1. *B*. 2. *F*, *G*, *C*, *L*. 3. *A*, *D*, *E*. 4. *H*, *J*, *K*, *N*. 5. *I*, *M*.

4. *Conception of the simple mathematical relations of chance.* Twenty problems were given, of which the following is a sample. Twenty purses are lying on the table, all are empty except one, which contains $20, but you have no idea which one it is that contains the money. How much could you afford to give to be allowed to draw one of the purses. In the other problems the amount of money and the number of empty

and filled purses were changed about so that it soon became perfectly evident whether the relations involved were grasped.

Results. 1. *A*, *B*, and *G* gave the correct answers to all. 2. *C*, *E*, *H* and *N* gave answers varying roughly but not exactly according to the conditions; most, however, being incorrect. 3. *D* and *F* varied their answers very slightly according to the conditions, practically all being incorrect. 4. *I*, *J*, *K*, *L*, *M*, showed no comprehension at all of the relations. For example, *J*, after a few problems, settled on $1.00 as the answer for all. When asked why he answered $1.00 for all the problems, he said, "Because that ain't much." *K* and *L* always estimated the worth of a draw at a little less than the sum contained in the purse; the former because "you are sure to earn 50 cents if you draw it," the latter because "If you draw it then you are $1.00 ahead."

5. *Problems involving the relations of measuring vessels*. This division included the following nine problems:

(1) With a 7 and a 5 pint vessel how measure out 10 pints?
(2) " " " " " " " 9 "
(3) " " " " " " " 8 "
(4) " 7 and 11 " " " " 13 "
(5) " " " " " " " 15 "
(6) " " " " " " " 10 "
(7) " 13 and 9 " " " " 17 "
(8) " " " " " " " 14 "
(9) " " " " " " " 18 "

These problems are of exactly the same form as that coming under division 5 of the puzzle group. For that one, however, quite a different sort of mental ability is demanded than for the problems here given. For these, no vessels were supplied, but only the numbers representing the size of the vessels, together with pencil and paper. Since the boys now understood the general nature of these problems the puzzle aspect was no longer present. The solutions, however, are still of sufficient complexity to demand careful attention. Rapid combinations must be made, and as there are usually several steps in the solution, the result of the first stages of the process must be kept in mind while the last stages are being completed.

Results. *A*, *B*, *C*, *D* and *G* solved each within the five minutes allotted. *E* failed on one, *F* and *J* on two, *I* and *N* on three, *H* and *K* on four, *L* on five, and *M* on seven. The *time* is here very significant. *B* finished eight of his solutions in less than one minute each, *D* seven, *A* six, *C* and *E* five, *G* four, *J* and *F* three, *H*, *L*, and *N* two, *K* and *M* one, and *I* none.

6. *Problems involving the sharing of expenses*. This was a

series of three problems, and, like most of the other series, of increasing difficulty. (1) *A* hires a carriage for $4.00 to drive to town and back. When half way there he overtakes *B* who wishes to ride with him. *A* allows him to do so on condition that *B* will share half of what the carriage costs for the distance he rides. How much does *B* owe *A* if he rides on to town and then back to the half-way spot where *A* took him in? (2) Same kind of problem except that the carriage cost only $1.50 and instead of taking in only one man he took in two, each of whom was to pay his share for the portion of the journey he rode. In the 3rd problem the cost of the carriage was $12.00, while *B* and *C* were taken in after one-fourth of the journey had been made.

Conditions. In order to avoid the difficulties in the wording of the problems, I illustrated them with paper and pencil as follows:

× △ ×
A's home Where *B* got in Town
Whole cost of carriage $4.00

The other problems were objectified similarly, and care was taken to repeat the statement until the subject understood the conditions, or until it was seen that he had not the ability to do so. When the solution was not reached within 10 minutes I gave a suggestion by pointing out what the entire cost of the carriage would be from the point where *B* entered, on to town, and back again to the same point. In case the solution was not reached within ten minutes more, I myself explained the solution to the subject very carefully and then allowed him to try the succeeding problem.

Results. 1. *A*, *B*, *C* and *G* solved all without help. 2. *D* and *E* failed on all in the allotted 10 minutes, but succeeded after the above mentioned suggestion was given them. 3. *F*, *L*, and *N* solved none, but gave some evidence of understanding the solution after it was explained to them. 4. *H*, *I*, *J*, *K* and *M* apparently understood nothing even after careful and repeated explanation.

7. *Problems involving the cost of two articles.* This group contains a list of seven problems. (1) I bought a bottle and a cork for $1.10; the bottle cost $1 more than the cork; how much did the cork cost? (2) I bought a horse and colt for $150, the horse costing $100 more than the colt. Find cost of the colt. The other five problems were analogous to these. The last one, however, involved a fraction and deserves special notice. (7) I bought a violin and bow for $20.00, the violin costing $15.00 more than the bow. Find the cost of the bow. This problem was inserted as a test to indicate whether or not the previous solution had been by rational procedure or simply

by trying different numbers until a combination was found that would satisfy the conditions of the problem. Pencil and paper were forbidden. When a solution was not reached in 10 minutes I explained the problem to the subject, and then let him proceed with the next in the list.

Results. Only two subjects solved the first problem, *A* and *G*. After the first, *A*, *B*, *D*, *E* and *G* had practically no difficulty, answering each within a few seconds. *L* and *N* also solved all after the first problem, but only after a good deal of fumbling on each one. *H*, *I*, *J*, *K* and *M* were as far from a solution of the last as of the first, although I did my best to explain each solution to them before setting them to the next. *C* had to be told the second, and thereafter had no difficulty. *F* failed on the second and also the last, showing that he had not evolved any rule.

8. *Problem involving the development of a rule.* I took a sheet of paper, folded it twice, in opposite directions, cut off the doubly folded corner, and before unfolding the paper, asked the subject to state the number of holes my cutting had made. After receiving the answer I unfolded the paper and allowed the subject to see whether or not his answer was correct. Then another sheet was folded similarly three times and the subject's answer to the same question recorded. The same was repeated for four, five, six and seven foldings. The rule in question is, of course, that the number of holes made by cutting off the corner of the folded sheet is doubled by increasing the number of folds by one.

Results. *B*, *C*, and *D* made no error. *A* made no error after the third trial, *G* none after the fourth trial, *L* got the last one correct, while the others, including *E*, *F*, *H*, *I*, *J*, *K*, *M* and *N* gave incorrect answers to all.

The following table summarizes the results for mathematical ability.

TABLE III.

Ranking for Mathematical Tests.

Sorts of questions.	1	2	3	4	5	6	7	8	Rank.
A	1	1	1	1	1	1	1	2	1
B	1	1	1	1	1	1	2	1	1
C	1	2	2	2	2	1	3	1	4
D	2	2	2	4	1	2	2	1	5
E	2	2	2	4	2	2	2	5	7
F	1	2	1	3	2	3	3	5	6
G	1	1	1	1	1	1	1	3	3

TABLE III.—*Continued.*

Sorts of questions.	1	2	3	3	5	6	7	8	Rank.
H	4	4	2	2	4	4	5	5	10
I	4	4	5	5	3	5	5	5	12
J	5	4	4	5	3	5	4	5	11
K	4	4	4	5	4	5	5	5	12
L	3	2	2	5	4	3	3	4	8
M	5	5	5	5	5	5	5	5	14
N	3	4	2	4	3	3	3	5	9

It is worth noticing that in these tests *E* and *L* do not depart from the groups to which they were assigned by their teachers. It suggests that rapidity and precision in number work may be a considerable factor in "brightness" in the school sense of the word. It is true, also, that with tests of this sort the amount of school training is apt to be a factor. Such problems, nevertheless, make demands upon the powers of logical and abstract thought and are not without value as a test of these matters. Upon such problems Hancock based his study of the reasoning powers of children.

VI. LANGUAGE.

It is useless to insist on language as an index of intellectual development. Language is not only the expression, but also the *sine qua non* of conceptual thought proper. Every stage of a child's development has its peculiar language interests and language capabilities. Perhaps more than any other one class of facts, language growth epitomizes the development of a child's intelligence as a whole. My observations in this field include 1 Reading, 2 Building words from given letters, 3 Correction of mutilated text, 4 Spelling, 5 Fluency of expression and 6 Facility in obeying oral commands.

1. *Reading*. The subjects were given an easy and interesting story about 600 words in length to read aloud. They were simply asked to read as well as they were able. Careful notes and gradings were made. Following is a summary of the results :

TABLE IV.

Records from Reading Tests.

	Grade.	Time.	Words not pronounced correctly.	GENERAL REMARKS.
A	2	5½	0	Fluent, fairly expressive, a little monotonous, voice not very strong, no repetition, no hesitation, no mispronunciation, easy to follow. Gets B at school on reading.

TABLE IV.—*Continued.*

	Grade.	Time.	Words not pronounced correctly.	GENERAL REMARKS.
B	1	4¾	0	Modulation almost perfect, no repetition, no mispronunciation, reads with more expression than do most educated adults, could read at 4½ years of age and at 6 could read anything. Gets A at school.
C	1	4½	0	Voice pitched rather high, very much expression, emphasis a little overdone, slight stammering now and then with repetition of one or two words, hesitates once in a while apparently to let thought catch up with language. A to B at school.
D	2	4¼	0	Very much expression, no repetition, no mispronunciation, emphasis placed almost perfectly, matter of fact tone of voice. Gets A to B at school.
E	3	4¾	4	Hesitates some, fair expression, voice soft and attractive, emphasis well placed. Gets A to B at school
F	2	4	0	No hesitation or mispronunciation, monotony of voice is worst fault, thought seems to run ahead of language now and then. Gets A at school.
G	1	3½	0	A little monotonous, rather too rapid, no hesitation, no mispronunciation, emphasis good. Gets A to B at school. (G is in grade 8 at school and his school rank is thus gained by comparison with pupils more advanced than most of mine.)
H	4	6	11	Voice husky and nasal, very monotonous, poor emphasis and expression, reads sentence by sentence as though they were disconnected. Gets C at school.
I	3	5¼	2	Fair expression, tolerably fluent, little mispronunciation, emphasis misplaced here and there, voice rather subdued, no hesitation. Gets B— at school. Likes reading.
J	4	6½	6	Tolerably fluent, stopped three or four times to spell words, voice rather coarse and monotonous, emphasis not often misplaced. Gets C at school. Likes reading.
K	4	8½	9	Slow, hesitating, apparently takes in only a small portion at once, unable to read fluently through short sentences, voice monotonous, emphasis misplaced often. Gets C at school.
L	3	5	1	Tolerably fluent, fairly good emphasis, little mispronunciation, repetition now and then. Gets B to C at school. Likes to read.
M	4	9	5	Very slow and hesitating, runs over punctuation marks, expression and emphasis not so very bad. Gets C at school. Dislikes reading.
N	5	15	51	Voice pitched high and wholly unnatural, extraordinarily monotonous, sing-song tone, very slow and halting, spells over about one-third to one-half the words, misplaces emphasis, pays little heed to punctuation. By far my poorest reader. Gets D at school.

For two weeks I tutored *N* daily one hour in reading. His reading is by small units. Phrases are apparently not thrown together into one mental content. I made special effort to correct this fault, thinking it possibly only a matter of habit, but with little success. In making the effort to read by larger wholes he miscalls and transposes very many words. I had also little success in trying to get him to tone his voice down to conversational pitch and to modulate it more naturally. Punctuation was little heeded. He has a very marked habit of reversing the position of words in a phrase and of separate sounds in a word. Very often he hits correctly on part of the sound of a word and fills in the rest incorrectly. For example, *as* instead of *so*, *saw* instead of *was*, *with* instead of *what*, *wistful* instead of *wise*, *icicles* instead of *ice crystals*. Such errors are made in almost every line. Careful re-examination showed no defect of vision.

To summarize the results on reading, I may say that the dull boys, as a group, are decidely inferior to the bright boys. They are less fluent, miscall more words, and have far less expression. The tone of voice is more monotonous and has more of the unnatural "schoolroom" pitch. The reading is evidently also by smaller units, phrases often being uttered separately as though unconnected. The frequently misplaced emphasis shows that fine shades of meaning are not grasped. Their rate is also decidedly slower, especially with *K*, *M*, and *N*. It must be kept in mind, however, that the stupid boys have done much less reading. (See Individual Sketches, Section XI below.) It cannot, of course, be determined how much of the difference is thus to be accounted for.

I believe that careful experimentation giving a detailed analysis of the reading process among these fourteen boys would have yielded important results. Even the mere verbal recognition of words involves the use of intricate mental machinery, and if there is a hitch at any part of it the process is seriously interfered with. Add to this more mechanical phase the accompanying interpretative processes necessary to good reading and we have opportunity for a wide range of mental ability to show itself.

In the first place, reading rate is a measure of the rate of association. Letters become associated together in certain combinations making words, words into word-groups and sentences. Recognition is for the most part an associative process. Rapid and accurate association will mean ready recognition of the printed forms. Since language units (whether letters, words, or word groups) have more or less preferred associations according to their habitual arrangement into larger units, it comes about that in the normal mind under normal conditions these preferred sequences arouse the apperceptive complex necessary to make a running recognition rapid and easy. It is reasonable to suppose that in the sub-normal mind the habitual common associations are less firmly fixed, thus diminishing the effectiveness of the ever changing apperceptive expectancy. Reading is therefore largely dependent on what James calls the "fringe of consciousness" and the "consciousness of meaning." In reading connected matter every unit is big with a mass of tendencies. The smaller and more isolated the unit the greater is the number of possibilities. Every added unit acts as a modifier limiting the number of tendencies until we have finally, in case of a large mental unit, a fairly manageable list. When the most logical and suitable of these associations arise easily from subconsciousness to consciousness, recognition is made easy, and their doing so will depend on whether the habitual relations of the elements have left permanent traces in the mind.[1]

The reading of the sub-normal subject bears a close analogy to the reading of non-sense matter by the normal person. It has been ascertained by experiment that such reading requires about twice as much time as the reading of connected matter. This is true for the reason that out of thousands of associations possible with each word, no particular association is favored. The apperceptive expectancy, practically *nil* in the reading of non-sense material, must be decidedly deficient in all poor reading.

With the ordinary reader, also, there is a feeling of rightness or wrongness about the thought sequences. That my poorer subjects have this sense of fitness to a much less degree is evidenced by their passing over words so mutilated in pronunciation as to deprive them of all meaning. The transposition of letters and words and the failure to observe marks of punctuation, point to the same thing. In other words, all the reading of the stupid subject is (to him) with more or less non-sensical material.

2. *Word making*. Four trials were given, on different days, in constructing words out of given letters. The first test was ten minutes in length and the letters were t e i a b r. Record was kept of the number of words made during each two-minute period. The second test was the same with the letters m e k i a f g n. The third lasted only eight minutes and a different set of letters was given for each two-minute period. They were (1) r n a d o, (2) o s d n a e, (3) c d o b u v e r,

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[1] I am indebted for much in the above discussion of the intellectual processes of reading to Dr. E. B. Huey's paper on The Psychology and Physiology of Reading, *Am. Jour. of Psy.*, 1900.

(4) p y a h n t e. The fourth was a similar test with the letters (1) k r e o p d a, (2) n t e s a i p, (3) b m o t a e k, (4) m o n e d i e. The following is the ranking obtained from these four tests.

GROUP I.

A	B	C	D	E	F	G
3	1	6	5	9	6	4

GROUP II.

H	I	J	K	L	M	N
13	11	8	9	2	14	12

A good many factors enter into the success of this sort of work. Much depends, of course, upon the vocabulary at command, and this in turn depends largely upon home training and amount of habitual reading as well as upon native retentiveness. A second factor is ability to spell, and habits of word analysis generally. Very important, also, is the use of a rational plan; some skipped about and made combinations at random, while others took the letters one by one and joined them in as many different ways as possible with the others. Lastly, the rate of shifting of attention, and the degree of mental inertia as opposed to spontaneity, also contribute to the total result.

Without going into details we may state that considering what the previous tests had revealed the results gained from this one are close to what one would have anticipated. *E*, *H*, *I*, *J*, *K*, *M* and *N* show least plan of procedure, just as they did in the puzzle series. The ones who are deficient in spelling, amount of reading done, ability to read, etc., also did poorly here. Perhaps the only surprise is that *L* did so well, though his reading and general command of language would cause us to expect him to far outstrip the others of his group.

3. *The Mutilated text.* Two trials were made of the Ebbinghaus test (5). 1. The subjects were given the following mutilated story and were told to fill the blanks as they thought it ought to be done.

THE STRENGTH OF THE EAGLE.

One —— —— eagle —— with the —— birds —— see —— could—— —— highest. ——— agreed —— he who —— fly —— —— should—— called —— strongest ——. All started —— —— same ——— and —— away among —— cl——. One by —— they ——— weary —— re———, but —— eagle —— upward and —— un——— —— was—— mere speck — —— heav——. When he —— back —— others were —— for him; and —— —— touched —— ——— a linnet —— off —— back where — —— ——— hidden and —— that —— himself —— —— strongest ——. "—— —— stronger —— —— ——," said the ——"for not —— did I—— as high but —— he began —— downward —— I — my hiding —— and —— up ——little ——." —— this boastful —— the —— —— their heads and —— —council to —— the matter. After —— long —— —— decided —— the —— —— the ——— bird —— not only —— he —— so high, but —— —— the —— as well.

To —— day —— plumes —— —— —— are emblems of str—— and cour———

The results are summarized as follows:

TABLE V.
Test with mutilated text.

	Grade.	Time.	Errors.			GENERAL REMARKS.
			Making sense.	Making non-sense.	Blanks not filled.	
A	4	35	30	31	0	Much non-sense. Haphazard. Steady rate.
B	1	26	9	0	3	Almost all correct. All makes connected sense. Quick, steady, looks ahead.
C	2	15	12	7	8	Lazy, attention relaxed. Calculates time it will take to finish.
D	2	17	25	10	0	Some idea of meaning as whole. Got the main idea. Worked hard. Works to get meaning.
E	3	35	21	23	0	Phrases well connected. Little meaning to sentences as wholes. Lost main idea. Rather inattentive.
F	2	30	24	6	0	Attempts sense. Original. Misses main point. All makes fair sense. Looks ahead one or two sentences.
G	1	19	10	0	0	Nearly all correct. Runs through to get meaning and fills easiest first.
H	5	15	24	43	2	Rapid, careless, got none of the story. Works by phrases, No sentences.
I	5	25	37	32	0	Nearly all non-sense. *E. g.*, two verbs together. One word on two blanks and *vice versa*. No lack of confidence, no hesitation.
J	4	45	37	29	0	Fills it as a number of fragments. The sentences have no connection. Filled blanks steadily.
K	5	25	28	36	0	All non-sense except one or two easy parts, Phrases at a time. Confident. Little hesitation, steady.
L	3	35	6	6	25	Tries to make sense but omits much because he can't get the crucial sentences. Does well what he fills. Wants to quit because he can't understand it.

TABLE V.—*Continued.*

	Grade.	Time.	Errors. Making sense.	Errors. Making non-sense.	Errors. Blanks not filled.	GENERAL REMARKS.
M	5	40	8	2	61	All omitted but very easiest parts. Worked hard. Runs through all the story but can get no meaning.
N	3	14	12	7	27	Rather careful to avoid non-sense. Attention relaxed. Had to be encouraged.

The following gives an idea of the amount of difference between one of the best and one of the poorest.

B. One day an eagle went with the other birds to see who could fly the highest. They agreed that he who could fly the highest should be called the strongest bird. All started at the same time and flew away among the clouds. One by one they became weary and returned, but the eagle went upward and upward until he was a mere speck in the heavens. When he came back the others were waiting for him; and when he touched the ground a linnet flew off his back where the thief had hidden and said that he himself was the strongest bird. "I am stronger than you are" said the linnet, "for not alone did I fly as high, but as he began flying downward then I left my hiding place and flew up a little higher." But this boastful —— the —— —— their heads and went to council to decide the matter. After a long time they decided that the eagle was the strongest bird, and not only because he flew so high, but he had the strength as well. To this day the plumes of the eagle are emblems of strength and courage.

K. One with the eagle and with the small birds and see who could fly the highest, and agreed and he who will fly the higest should be called the strongest they All started in the same place and whent away among the clouds. One by one they were weary and returned, but the eagle flew upward and could less he was in mere speck and was heavy. When he came back the others were gone for him; and so he touched his wing a linnet and off whent back where he was then hidden and thought that he himself was the strongest I, "am the stronger and so he" said the brid, "for not and did I go as high but then he began to downward and I in my hiding place and whent up a little high." and this boastful in the way of their heads and had a council to take the matter. After a long while he decided that the king of the little bird and not only and he was so high, but he did the thing as well. To more day can plumes and so they are emblems of strait and course.

2. In order to rob the test of its puzzle nature a second trial was given with the following mutilated story; but in this case the complete story was read aloud to the subject first. He therefore knew the general sense and had a much narrower field to hunt over in the search for suitable words.

WHY THE MOLE IS BLIND.

An Indian once —— —— —— into cloud ——. Then —— —— ——

trap —— ——, laughing to —— how —— would —— ——. The —— did —— —— back, but ——. The —— on —— daily —— —— right —— —— ——.

When —— bright ——— —— —— come the —— began —— be ——, and when —— found his —— had —— —— fast he —— —— know —— —— do.

He tried —— —— near enough — —— the cords, but —— —— from the —— —— him and he gave —— ——.

Then —— —— many —— to try ——, but —— all found —— —— too ——. At —— the —— ——, "I will —— through —— —— under the —— and so get at —— ——."

This — ——, and the —— —— up —— —— h——.

But it —— so —— that the poor —— —— not —— ——, and the —— of —— —— —— out his ——.

—— then the —— have had —— —— —— dark —— and unless one —— very —— he —— —— find —— ——.

The following table summarizes the results:

TABLE VI.

Results of test with mutilated text.

	Grade.	Time.	Errors.			GENERAL REMARKS.
			Making sense.	Making non-sense.	Blanks not filled.	
A	2	25	30	7	2	All fair sense. Phrases now and then wrongly turned. Goes over it all and fills easiest first.
B	1	17	34	0	0	All good sense, but large changes made. Very careful with every blank.
C	1	9	18	0	0	All good sense. Only slightest changes. Whispers a good deal.
D	1	11	18	3	0	Nearly all makes sense. Much whispering. Works by fits and starts.
E	2	24	27	0	13	Fair sense but for the omissions. Several changes. Works steadily.
F	1	17	17	0	1	Good sense. Only very slightest changes. Worked steadily.
G	1	13	14	0	0	All the sense good. Only very slightest changes. Works through it as a whole.
H	5	15	19	56	5	Nearly all non-sense. Jumbled in all sorts of ways. Often two words in one blank. Very little hesitation.
I	4	30	39	31	10	Sense here and there, but great changes and much non-sense. Extra words inserted. Fills by phrases. Worked steadily.

TABLE VI.—*Continued.*

	Grade.	Time,	Errors.			GENERAL REMARKS.
			Making sense.	Making non-sense.	Blanks not filled.	
J	3	25	28	8	16	Fairly good in almost half, rest poor. Some non-sense. A few extra words inserted. Fills by phrases. Worked very hard.
K	3	18	33	20	0	Much non-sense. Very many errors that change meaning. Extra words inserted. No hesitation.
L	2	30	36	0	8	Much better than others of this group. Many phrases turned but sense kept. Original in expression. Goes through to get sense.
M	5	30	30	3	47	Only about half filled, most of this wrong. Runs through it as a whole but can't get meaning.
N	3	25	24	4	14	Most of it makes sense but many phrases changed. Much whispering. Has to be encouraged.

Following are samples of the work of the two groups.

F. An Indian once chased a squirrel into cloudland. Then he set a trap for him, laughing to see how he would catch him. The squirrel did not come back, but—! The sun on his daily trip jumped right into the trap. When the bright sun did not come the Indian began to be frighten, and when he found his trap had the sun fast he did not know what to do. He tried to get near enough to losen the cords, but the heat from the sun scorched him and he gave it up. Then he got many animals to try it, but they all found the heat two great. At that the mole said, "I will dig through the ground under the trap and so get at the sun." This he done, and the sun went up to the heavens. But it went so fast that the poor mole could not get out, and the heat of the sun put out his eyes. So then the moles have had their homes in dark places and unless one looks very sharp he cannot find the mole.

H. An Indian once taued [chased] a squared [squirrel] into cloud after him. Then he sairtng [setting] that trap would catch him laughing to himselft how would would he catch him. The squared did not come back, but sun The day on one daily the Indian right did not catch sun. When sun didnt bright Indian the he come sun began sun to be there, and when Indian found his trap had caut sun fast he did not know what to do.

He tried to gether near enough but tried the cords, but sun was from the hot and him and he gave it up. Then he again many time to try but he all found it was to heard [heat]. At then the Indian, "I will call through amigle [animals] under the the and so get at the trap." This mole said, and the he get up then uned [under] hearth [earth.] But it he was so quik out that the poor mole could not get out well, and the ——— of —— —— —— out his ———. But then the mole have had to live in the dark but and unless one come very quik he was found find blind mole.

The results of the two tests run closely parallel. With certain exceptions the two groups are widely separated in each. *A*, however, ranks below *L* in both tests and below *N* in the first. *E* is also rather poor. *H*, *I*, *J*, *K* and *M* stand far below all the others.

Ebbinghaus regards this test as a reliable measure of intellectual ability. The following is his description of that ability. "It does not depend upon knowing many things, *i. e.*, upon the reappearance in consciousness of definite individual impressions and on reacting to these with ideas one has already associated therewith. It is much more complex, more creative. Its essence lies in comprehending together in a unitary, meaningful whole, impressions which are independent of each other and answer to associations which are heterogeneous and partly contradictory. Intellectual ability consists in the elaboration of a whole into its worth and meaning by means of many-sided combination, correction, and completion of numerous kindred associations. . . . . It is a *combination* activity."

My experience with the test causes me to regard it favorably; but like all others, if taken alone it can only give a partial account of the subject's ability. It certainly does indicate something as to the general command of language. I am inclined to think that somewhat mechanical activities like memory and association, as distinguished from synthetic or combinative processes, play a relatively more important rôle in this test than Ebbinghaus assigns to them. Indeed, verbal memory, in the broad sense, would seem to be the chief factor in success. It gives what we term *fluency* in language. Verbal memory also means ability to carry the story as a whole, and therefore to see the connections in meaning running through it.

Something depends on the degree of acquaintance with this sort of literature, and perhaps still more upon peculiarities of language development in the subject. Greater originality and less imitation displayed by the subject in language acquisition will mean a poorer showing in this test, all else being equal. The method, also, of going about the task influences the final result to an important degree. The rational way is to look first over the entire story to get a conception of the whole. This was the method adopted by those who did best. In fact several of group II did not even rise to a conception of the fact that the text as a whole must make sense. These filled the blanks in just the order they were come upon and the result was either complete non-sense or else a series of phrases and clauses making fair sense within themselves but not connected with each other.

4. *Spelling.* Two lists of 50 words each were given to the

subjects on different days to be spelled. I pronounced the word, the subject writing it. Misspelled words in the other written exercises were also marked. From all the data thus obtained our subjects rank as follows, on a scale of five.

GROUP I.

A	B	C	D	E	F	G
2	1	2	3	3	1	1

GROUP II.

H	I	J	K	L	M	N
5	3	4	5	3	5	5

The reader may be inclined to have little regard for spelling as a test for mental ability, on the ground that ability to spell depends on the more or less fortuitous formation of certain restricted habits of observation and word analysis, habits not so very essential to good speaking or reading. There is no doubt a certain amount of truth in this contention. From observation, however, I believe that this is more often true of adults well on in life than of school children. That is, adults are likely to forget their spelling in proportion as their attention gravitates toward larger and more vital interests. A well known American scientist of undoubted genius confesses that he has lost to a considerable degree his ability to spell common English words. His students readily perceive in him a similar lack of attention to details of any sort that are regarded as formal or trivial. And yet this same man has an astonishing command over detailed and curious information of other kinds, especially of whatever happens to have significance for his scientific theories.

As another instance, I am acquainted with a man who is recognized in his community as possessed of more than ordinary business ability. As a youth he taught a country school, and I have learned from reliable sources that in the old-fashioned spelling matches he was noted for his ability to "stand the floor." At present he misspells all but the commonest words. He has no fixed way of writing a word, but employs any thinkable combination of letters that will represent the proper sound. In handling concepts of business import he has neglected the to him trivial art of spelling and so has lost it, just as many an able college president has forgotten his Latin or Greek paradigms. Without disputing that intellectual ability is often more or less one sided, I still seriously doubt whether there are many boys and girls whom we can in any sense regard as extraordinarily intelligent who with honest application could not learn to spell tolerably well. With regard to my subjects, I believe the differences in their ability to spell are significant. Unlike the scientist and business man mentioned above, they have been compelled in their daily school work to pay heed to their spelling, and this is true to approximately the same degree of all the subjects. Moreover, they have not yet reached the age when abstractions have replaced formal observation, when microscopic vision has become telescopic.

5. *Power of Expression.* It is rather difficult to state clearly what is included under this term and yet the idea is fairly definite. The grading was done very much as one would grade ordinary school compositions, except that nothing was allowed for penmanship, neatness, spelling, punctuation, etc. Among other factors are fluency, coherency, richness of vocabulary, spontaneity and readiness of speech, correctness of grammatical construction, sentence structure, directness or awkwardness of expression, etc. With such a variety of items contributing to the total result, the grading can be nothing more than approximate. It is valuable, however, as indicating the exceptional subjects.

After a great deal of careful consideration both of their conversational language and of the written work which they did in other tests I arrived at the following grades. It is to be regretted that data were not secured such as would have made it possible for this ranking to be made by several others besides myself. The same is true of some of the other rankings.

GROUP I.

A	B	C	D	E	F	G
2	1	1	2	4	2	1

GROUP II.

H	I	J	K	L	M	N
5	3	3	4	2	3	3

The two most striking facts are the low position of *E* and the relatively high position of *L;* *H* is also lower than in the previous tests.

I have tried to characterize in a word or two the salient points for each subject. *A*. Fluent, wordy, awkward turns in expression, well connected. *B*. Clear, logical, coherent, words well chosen, beautiful style. *C*. Very fluent, bookish tone, rather flamboyant. *D*. Fair, but not striking. *E*. Sentences run together by *ands*, many words omitted, very incoherent and broken, hazy in meaning. *F*. Clear, brief, to the point. *G*. Logical, exact, careful. *H*. Hazy, indefinite, sentences connected by *ands*, many omissions of words, parts sound like non-sense phrases strung together. *I*. Fairly good, nothing striking. *J.* Separate sentences fairly good, but they do not follow one another naturally, a certain stiffness. *K.* Awkward, many *ands*. *L.* Fluent, marked tendency to use of big words, plainly ahead of his group in power of expression. *M.* Stiff and forced style, lacks fluency. *N.* A certain glibness, but childish in his manner of expression and in the frequent repetitions.

6. *Execution of commands.* A good indication of one's mastery of language is the ability to understand and carry out complicated verbal directions. It is commonly recognized as a sign of stupidity for one to blunder in trying to execute simple commands. A child can seldom be depended on to do a thing according to instructions, however unequivocal, apparently, the instructions may be. For the undeveloped mind such directions are little more than a jumbled mass of familiar sounds, the separate parts probably arousing the appropriate images, but the whole not comprehended in its logical significance.

To test this sort of language mastery thirty separate commands were given, orally, for moving chess men on a chess board.

The following are examples of the commands:

1. White. Move the king's pawn two steps.
2. Black. The same.
3. White. Move the king's bishop to his queen's bishop's fourth square.
4. Black. The same.
5. White. Move the queen's bishop's pawn one step.
6. Black. Move the queen's knight to his bishop's third square, etc.

This test was given after the chess practice to be described below (Section VIII) and none of the directions involved any points that the subjects were not familiar with. Important differences came out. The subjects of group I, as a rule, went to work to execute the command without question or much hesitation, while those of group II on hearing the command frequently looked up with blank face and some such expression as "What do you mean?" "I don't know what you want me to do!" "Show me," etc. The table gives the chief results.

TABLE VII.

Execution of commands.

	Rank	Average time in seconds per move.	Number of errors.	REMARKS.
A	3	11	8	Corrected all his errors. Five moves under one second.

TABLE VII.—*Continued.*

	Rank	Average time in seconds per move.	Number of errors.	REMARKS.
B	1	5	2	All but two of his moves under eight seconds. Very little difficulty. Nine moves under one second.
C	2	4	7	Very quick, impulsive, some of his errors evidently due to this.
D	3	6	10	Repeats the instructions in a whisper, moves quickly, later corrects, six under one second.
E	2	6	8	Eight under one second. Had to be showed one move.
F	4	12	11	Failed on four moves, five under one second.
G	2	6	6	Very little difficulty. Eight under one second.
H	5	13	20	Asked that several commands be repeated. Failed on five, five under one second.
I	5	16	15	Asked several repetitions, failed on four, one under one second.
J	4	13	15	Two repetitions, three failures, four under one second.
K	5	14	17	Five failures, one repetition, one under one second.
L	3	12	18	Two failures. Those he can understand at all he executes at once. Two repetitions, seven under one second.
M	5	21	17	Six failures, two under one second. Whispers over directions two or three times slowly.
N	4	11	13	Asked repetition four times. Three failures, one under one second, most of moves quickly made.

The table on page 352 gives the grades for all of the language tests.

VII. INTERPRETATION OF FABLES.

E. J. Swift (20) suggests that a subject's reaction to a complex situation is a better test of his intelligence than are the methods usually employed. Dr. Swift proposed three "situations" and the pupils of several schoolrooms were allowed to write what they thought of each: 1st, concerning the boy who put his hand into a jar to take out some nuts and grasped so many that he could not withdraw his hand. 2nd, the story of the soldier who in time of peace neglected to care for the horse that in war had served him faithfully. On the return of

TABLE VIII.

Grades and Ranking based on the Mastery of Language.

	Reading.	Word making.	Eagle Blanks.	Mole Blanks.	Spelling.	Expression.	Execution of oral commands.	Composite Ranking.
A	2	2	4	2	2	2	3	6
B	1	1	1	1	1	1	1	1
C	1	3	2	1	2	1	2	3
D	2	3	2	1	2	2	3	4
E	3	4	3	2	3	4	2	8
F	2	3	2	1	1	2	4	4
G	1	2	1	1	1	1	2	2
H	4	5	5	5	5	5	5	14
I	3	4	5	4	3	3	5	10
J	4	4	4	3	4	3	4	9
K	4	4	5	3	5	4	5	12
L	3	1	3	2	3	2	3	6
M	4	5	5	5	5	3	5	13
N	5	4	3	3	5	3	4	10

war the famished horse gave way under the weight of his rider. 3rd, Pestalozzi's fable of the Fish and the Pike. The fish were being eaten by the pike and brought suit against the latter. The judge, a pike, decided that he would mend matters by allowing two fish to become pike every day.

A comparison was made by Dr. Swift between the papers of his "brightest" and "dullest" subjects, with the result that he found no superiority on either side.

In order to give a further trial to this sort of test I allowed my subjects to give their interpretation to twelve fables which I selected after examining several hundred. I took each subject alone, read to him a fable, and then asked him to state orally what he thought it meant. The answers were therefore spontaneous and lacked the stilted and unnatural tone so common in the written exercises of the school. I cannot take space to repeat the fables here in full, but the substance of each is given below:

1. The fate of the stork which was caught in a trap set for cranes and was compelled to die along with the cranes. 2. The monkey that by use of flattery coaxed the cat to rake the master's chestnuts from the hot ashes. 3. The wolf that hired a crane to relieve him of a bone fast in his throat. After the work was done the wolf refused the promised pay and said that the crane had been paid by not having his head bitten off. 4. The girl who carried her milk to market and while calculating the eggs she could buy, the chicks she could produce from them, etc., tossed her head proudly and let fall the milk.

5. The camel that begged his master for room in the tent and then forced his master out. 6. The miller and his son who took their ass to town to sell. They walked, rode, or carried him just as people suggested until finally the animal fell into the river. 7. The foolish sheep who, at the request of the wolves, sent away the dogs that guarded them and so fell prey to their enemies. 8. The dispute between the wind and the sun as to who was the stronger. They decided by seeing which one could first make the traveller remove his coat. 9. The tortoise that begged the eagle to teach her to fly. The eagle bore her aloft and let her fall to earth. 10. The jackdaw that painted himself white and tried to live with the doves. After expulsion from their company his own mates refused to take him in. 11. The frog who tied the mouse to his leg by a string and then jumped into the water. As the drowned mouse floated on the surface it was seized by a hawk, who carried it away together with the frog and devoured both. 12. The maids who killed the cock which woke their mistress so early. No longer able to tell the time of night the mistress aroused her maids earlier than ever.

Finally, in order to secure results that could be compared to Dr. Swift's, I proposed to my subjects the same three stories that he used. We have therefore fifteen separate tests of this sort; a number sufficient to carry us beyond accidental variations in the quality of the answers. A subject will now or then do better or worse than we expect, but on the whole his level of efficiency in this kind of work can be estimated with a good deal of accuracy from a sufficient number of trials. The following are examples of the replies precisely as given by word of mouth, except for a few abbreviations. A casual glance will reveal significant and characteristic differences between the two groups. The poorest answers are italicised.

The Storks and the Cranes. *A.* To beware of taking other people's property. *B.* To think out what we do before we do it. *C.* That if you are caught with wrong things, they'll do the same with you as if you were bad. *D.* It means that if he was caught with them, he would have to die with them. *E.* Teaches us to keep away from bad company. *F.* Teaches us not to be caught with bad people. *G.* One is just as bad as the other if they steal. Don't know what it teaches. *H. Lesson is that it learns us to catch cranes and storks. I. It teaches us how to catch birds. J. Teaches us that cranes eat corn.* *K.* It means that — the cranes not to come and eat the grain again, and they lose their life for a little bit of grain. *L.* Don't know. *M. Not to go in those traps.* *N.* Teaches not to be with the birds that took the stuff.

The girl and her milk. *A.* Teaches us not to be too proud and not to say anything before you do it. *B.* Not to plan ahead too far. *C.* Not to make your plans until you've got something to make them with, and don't be too sure that they will work. *D.* She was too proud. She ought not to have counted her chickens before they were hatched. *E.* Not to count your chickens before they are hatched. *F.* She felt proud. Teaches us not to be too proud. *G.* Don't count your chickens before they are hatched. *H.* Learns her a lesson not to talk about anything before she gets it, and *not to carry a pail on her head. I. To not be too gay when you have anything, you might lose it.* *J.* Not to be too proud. When you be proud why everything goes back on you. *K*. Warns you not to be too proud. She thought that she was going to get so much and she got left. *L*. Not to be too proud. *M*. *Not to think we are so big*. *N*. Same as that she had n't ought to count her chickens before they were hatched.

The Arab and his camel. *A*. Not to let people do too much or they might do the same as the camel did. *B*. Don't know. The Arab ought not have let the camel in at all. *C*. When you get small things, don't ask for big things and don't put everybody else out. *D*. It was a greedy camel and teaches that the Arab had n't ought to let him in. *E*. The Arab knew that the camel was big and the tent was small. He ought to just let him put his head and neck in. *F*. Teaches us not to divide too much. *G*. Teaches us not be too good to selfish people. *H*. *Learns a lesson to the Arab not to stay in his tent with the camel again*. *I*. *To give poor people things and not the rich*. (Why?) Because he let the camel in and got out himself. *J*. Not to let anybody in when you think the place too small. *K*. Teaches the man not to let anything into his house again. He will get put out instead of the camel. *L*. *The camel thought he'd make the Arab go out there too as long as he kept his poor camel out. The camel was foxier than what he was*. *M*. Not to be selfish. The camel was selfish and wanted all the tent. *N*. That the Arab had n't ought to a been so foolish. Had n't ought to a let the camel have so much room.

The Miller, his boy and the ass. *A*. *To care for others, not for yourself*. The farmer did n't care for himself, he cared for his boy and ass. *B*. Not to pay any attention to other people. *C*. That if you try to please everybody, you won't please anybody and you will get into trouble yourself. *D*. They tried to please everybody and pleased nobody. *E*. That they had n't ought to mind every one. *F*. Teaches us not to try to please other people. *G*. Don't take everybody's advice. *H*. *Learns them a lesson not to carry a donkey across the bridge, or carry them any place*. *I*. *It means to help the old people instead of the young*. *J*. *Not to try to carry anything that is too heavy—A thing that kicks and everything*. *K*. Teaches the man not to mind what anybody else says. *L*. They thought they would sell the donkey, and before they got there the donkey fell into the river. *It teaches us not to think it till we are sure*. *M*. The miller wanted to do just as people told him to do. (Ought we?) Not always. *N*. They tried to please everybody and could not please themselves.

The Jackdaw and the doves. *A*. It means not to try to get into another company when you belong to one, or you might miss both. *B*. We should be contented with what we are. *C*. When you are one thing don't try to be something else. *D*. That the Jackdaw ought to have been contented with what he had. *E*. He was too proud of himself. He wanted to cut out every one else, and got caught. *F*. Not to try to look like others. *G*. You must not try to get what does not belong to you. *H*. *Learns us a lesson not to paint ourselves white and try to go into some other family*. *I*. Not to try to get into other company. *J*. *Not to do anything, paint yourself or anything, if you ain't a dove, or else you will never get back*. *K*. The Jackdaw wanted too much. It teaches him not to go to anybody else's place to get food. *L*. *That if he wanted to belong to the dove cote he ought to a kept still*. He wanted to belong to both companies, but by being a little bit fresh he could n't. *M*. Not to try to do what you can't do. *N*. Not to try to be somebody else. He ought to have lived the way he was always living.

The frog and the mouse. *A*. Not to be unkind or you'll get into trouble. *B*. To show kindness to our neighbors. *C*. Shows how foolish the mouse was to try to do something she knew she could not. *D.* The frog had so much pride and thought he'd harm the mouse, and after he did he got harmed more. *E.* Teaches not to be too kind like the mouse was. *F.* Teaches you not to be unkind to people. *G.* To do to others as they have done to you, because the mouse had showed him everything and did not hurt him. *H.* Learns a lesson to the mouse not to go in the water for he can't swim; *and learns the frog not to tie a piece of grass to his leg and the mouse's leg.* *I.* Not to take anybody else in a bad place. *J. Teaches you not to go if you think you can't swim.* *K.* (Omitted by mistake.) *L.* Teaches us not to be silly like the frog. *M.* Not to be foolish. *N.* The mouse was foolish. He might know he would get drowned if he went in the water.

The maids and the cock. A. Not to work your children too hard. *B.* That we ought not to try to disarrange any one else's plans. *C.* That the little maidens had not ought to a killed the cock without their mother's advice. *D.* Teaches that they ought to have left the cock alone and they would have been all right. *E.* Teaches us not to do anything wrong. *F.* Not to do wrong. *G.* Don't know. *H.* Learns a lesson not to kill a cock when he wakes them up early in the morning and so they can't tell what time it is. *Teaches us not to kill a cock. I. Not to give any little person any hard work. J. Not to kill anything else you'll get woke up just the same.* *K.* (Omitted by mistake.) *L.* Not to be so silly like the maids and kill the cock, for the cock was not to blame. *M.* Teaches the girls not to be lazy. *N.* That they ought to have been satisfied with getting up when the cock crowed instead of getting up in the middle of the night.

The fishes and the pike. A. I think the judge ought to a done something to the pike. (Fair?) No.—Fair in one way though, to let the little fish become pike, but he ought to a punished the pike. *B.* Not fair. (Why?) Because the more pike there became, the faster they would eat the little fish. *C. It might be better for the little fish in some ways,—they would not be eaten up.* It would be bad for the pikes because they would have nothing to eat. *D.* That was all right, but then if only two are changed to pike the others would get eaten up. *E.* While the two fish are changing into pike the rest of the little fish would get eaten up by them. *F.* (Omitted by mistake.) *G.* It was all right, but it was kind of funny that they didn't do anything to the pike. *H.* It will learn the little fish to keep away from the pikes. (Good or bad decision?) *Bad cause they were gittin turned into pikes. I. Good decision, because the little fish was turning into big ones and the big fish wouldn't dare to eat them now. J. The judge was kind enough to let them be a pike. K. He ought to let all the fish be pike if he was going to let two, cause the other little fish was as good as the two. L. Fair decision, for two would be turned to pike every day and not be eaten up.* *M.* If the pike could eat up all the little ones in a day it would not be a good decision. *N.* Don't know. He ought to a stopped the pike from eating up the little fishes.

Group II show two chief points of inferiority. In the first place, they more frequently miss the point of the story altogether. For example, *H* and *I* think that fable 1 teaches us how to catch birds. *J* thinks it teaches that cranes eat corn. In 5, *I* thought that the Arab got out of the tent of his own accord as an act of charity. *H* and *J* interpreted fable 6 as a warning against carrying a donkey or *anything else that kicks!* *I* thinks it teaches respect for old age. In answer to 15, *H* thought it was bad for the little fish to be turned into pike. *I*, *J*, and *L* thought it was very kind of the judge to change them into pike. From such replies it is evident that, as a whole, group II are unable to appreciate fine shades of meaning. They know in a general way what is being talked about, but they fail to comprehend much that to us seems clearly expressed. In fables, moreover, a good deal is frequently left to be inferred by the reader, and here always the dull subject is at a disadvantage. He cannot supply the meanings hinted at because he is insensible to the thought fringes. It is these that must give meaning to the fable; the dullest subject is apparently able to image the objects and activities described, but taken in the rough such imagery gets him no whither. They are like pieces of scrap iron that need welding to be of value.

In the second place the dull boys are plainly deficient in degree of abstraction. Even when they give an approximately correct interpretation they usually express it in the concrete terms of the given situation, instead of generalizing it. For example, *H* thinks fable 5 "learns the Arab not to stay in his tent with the camel again." In 10, *H* answers "learns us a lesson not to paint ourselves white and try to go into some other family." *J* "not to do anything, paint yourself white or anything, if you aint a dove, or else you will never get back." In 11, *H* sees only a warning to the frog never again to fasten a mouse's leg to his own with a piece of grass. *K* answers 14 thus: "It teaches the man when he has a horse to keep it and use it well." *M*, "the soldier ought to have fed him just the same when he didn't go to war." *L* replies to 2, "Its just like if you was stealing apples, and you steal them and another fellow eats them." 9, *H* "learns the tortoise not to fly when he ain't got any wings."

The better subjects answer nearly always in general terms and *N* of the stupid group did also, probably because of his advantage in age.

This last suggests that what is tested by the interpetation of fables is in part at least that general change of mental horizon that comes with increased experience and dawning maturity. But as mental deficiency is itself in many respects a sort of continued infantilism, this is, perhaps, not so much a point of criticism as of commendation.

My results with this test show such clear differences between the bright and dull groups that I cannot but think the method employed by Dr. Swift in making his tests somewhere at fault. I should judge that his results would have been different if he had been able to take his cases individually instead of collectively.

The grades as I have estimated them for the tests with the fables are given in the following table.

TABLE IX.

Grades and Ranking based on the Interpretation of Fables.

Fables.	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	Rank.
A	4	4	2	3	1	5	4	4	5	2	2	2	1	3	4	8
B	4	3	3		3	1	2	4	1	1	2	2	1	3	1	1
C	1	2	3	1	2	1	4	5	1	1	2	4	1	3	5	2
D	2	4	4	2	3	1	3	4	4	1	4	4	2	4	3	6
E	1	4	2	1	1	1	5	4	4	4	4	2	1	3	2	4
F	1	4	5	4	1	1	4		4	2	3	2				6
G	4	2		1	1	1	1	4	1	3	3		2	3	2	3
H	5	5	5	4	4	5	4	5	4	3	4	5	4	5	5	14
I	5	5	5	4	5	5	5	4	1	1	4	4	1	4	5	9
J	5	4	2	4	3	5	4	4	4	5	5	5	1	5	5	11
K	5	4	4	4	4	1	4	5	4	5			2	4	3	10
L		3	5	4	5	5	4		2	5		4	1	4	5	13
M	5		4	4	3	2	4		5	5	3	5	1	5	3	10
N	1	1	2	1	3	1	3	4	3	1	4	4	3	5	3	5

VIII. LEARNING TO PLAY CHESS.

A complex game, such as chess or checkers, undoubtedly makes extensive demands on intelligence. This statement is not contradicted by the fact that many expert players have accomplished little in the useful arts or sciences. They have probably lacked certain emotional and volitional qualities, making it impossible for them to apply their intellectual powers to other work. For example, it is obvious that the constructive imagination necessary for chess plays also a part in the success of the military strategist, while the moral and volitional qualities may be much more dissimilar. It is more likely the rarity of a suitable combination of the latter that accounts for the fewness of great military strategists, rather than the rarity of sufficient intellectual ability.

I intended to use checker-playing as a test, but finding that several knew something of the game, I gave chess instead. For three weeks, or about eight to ten hours in all, the subjects played in pairs, the bright against the dull. I watched the game and took extensive notes but did not record the separate moves. My judgment is, therefore, somewhat subjective, but the main differences are so evident that one could hardly mistake them.

The following table gives the chief facts. By "error" is meant moving a piece in some other way than is allowed by the rules. Ability to plan is graded on a scale of five. It should be explained that before beginning the playing I demonstrated all the main points of the game and also all the possible moves of each piece. This was repeated twice and the subject's questions were answered.

TABLE X.

Grading on Learning to Play Chess.

	Errors in 1st 100 moves.	Errors in 2nd 100 moves.	Rank on errors.	Grade on ability to plan.	GENERAL.
A	13	5	6	3	Several errors, poor defense, follows up a plan to neglect of rest of board, many "give-aways," quick.
B	2	0	1	1	Almost total absence of errors, by far the best player in all respects, never moves blindly, quick to grasp the situation and move.
C	1	2	2	2	Very few errors, effective planning, intermittent attention, and numerous motor automatisms. Nervously quick.
D	5	1	3	3	Few errors, occasional tendency toward aboulia, lack of sustained attention, and little plan, generally quick.
E	19	5	7	3	Relatively numerous errors, lack of sustained attention, general ineffectiveness due to a happy-go-lucky way of moving, quick.
F	7	1	5	3	Few errors, not very steady attention, short sighted, but deals fairly well with the immediate situation, quick.
G	7	0	4	2	Few errors, general ability to plan good attention, and quickness.
H	26	14	11	3	Many errors, readiness to capture and to defend pieces from immediate danger, ability to plan good as compared to errors, attentive, fairly quick. Has played checkers.
I	16	10	8	4	Numerous errors, overlooks capture, many "give-aways," general lack of plan, apparently attentive, fairly quick.
J	28	11	10	4	Numerous errors, vagueness of plan, inability to attend to more than one part of the board at once, absent-minded, fairly quick.
K	28	20	12	5	Many errors, many "give-aways," and general lack of plan. Slow.
L	23	15	9	4	Many errors, little plan, many "give-aways," good attention. Slow.
M	29	21	13	5	Very numerous errors, complete lack of offensive, over cautious, good attention, extremely slow, poorest player.
N	38	27	14	4	Frequent errors continued to the last. General lack of plan, attention not very steady, overlooks captures, many "give-aways." Slow.

A. Errors rather numerous at first but gradually eliminated. Played 16 games with *H* and won 6. Moves rapidly; median time about 3 seconds. Talks much about the progress of the game. Personifies the pieces. Plans ahead but neglects defense. Continually moves out pawns unsupported. Captures without noting result. The following notes, taken in 12th game, are typical: gives pawn to pawn; exposes bishop to castle, tries to trade knight for bishop; gives pawn to pawn; castle to pawn; bishop to queen; and queen to pawn.

B. No error after first game. Won 14 out of 15 with *L*, and 1 out of 2 with *C*. Median time per move less than 2 seconds. Showed curiosity about the rules and the purpose of the game. Seldom overlooks capture, not a move made blindly, laughs over the effect of bad moves, often asks whether I see his plan, guards king well, almost no "give-aways," usually wins from *L* with loss of only 2 or 3 pieces, talks to me while opponent studies his move. Not to be compared with any other players except *G* and *C*, and is far better than they are.

C. Very few errors. Won all of 12 games with *K*, and 1 of 2 with *B*. Nervously quick in moving. Median time less than 2 seconds. Does not attend to his plays half the time. Often stops to explain the outcome of different possible moves. Second only to *B*. Always plans ahead. Overlooks almost no captures. Has good ideas about the relative value of pieces. His showing injured by occasional inattention. Many motor automatisms while playing. (See section XI, below.)

D. Few errors. Won all of 12 games with *M*. Generally moves very quickly, but occasionally studies 5 to 10 minutes. On such occasions shows a tendency toward *aboulia* in his inability to decide what move to make. Fingers his pieces about, retracts moves, argues the advantages of different possible moves, and is unable to decide between alternatives. It does no good for me to hurry him; he wants to move quickly, but simply cannot. Perhaps his most striking trait is lack of sustained attention. Attends to other things while his opponent is moving. At his turn he gives a quick glance at the board and unless under a spell of *aboulia* moves without delay. Even when unable to move for several minutes, he does not study the board a third of the time. He touches different pieces, discusses moves, then talks of something, or even gets up and walks about, all the time keeping up a series of indescribable automatisms. Overlooks few captures, but shows little plan; overguards king and uses only a few pieces for the offense.

E. Worst of bright group on errors, but gradually left them off. Won 13 out of 17 games with *J*, and 2 out of 5 with *F*. Moves quickly, generally in less than 2 seconds. Seems careless and inattentive, as in all his work. Studies the board less than half the time. Sometimes, however, devotes a few seconds to working out an effective plan. Talks much about the plays. Quick to accept captures, but shows little initiative. Rather numerous "give-aways."

F. Few errors and these soon left off. Won three games out of 5 with *E* and 12 out of 14 with *I*. Moves rapidly at first, later is more cautious. Talks much about the progress of the game, but really studies the board very little. Looks about and talks with me. Lacks definite plan, but handles the immediate situation to fairly good advantage. Few "give-aways," accepts captures and makes use of all his pieces.

G. Very few errors. Won 16 out of 17 games with his older brother, *N*. Few moves take more than two seconds. Attentive, likes the game. Always plans ahead, seldom overlooks captures, few "give-aways." At first, overguards king, but later corrects the fault. Soon learns to take advantage of the fact that his opponent overlooks many captures, and so in order to locate his pieces where he wants them he exposes them to attack. Regularly makes use of all the pieces.

H. Many more errors than the poorest of the bright group. The knight, bishop, and castle were wrongly moved to the last. Won 10 out of 16 games with *A*. Moves rapidly, seldom overlooks captures, few give-aways, good deal of plan. Overguards the king, using only bishop and castle for attacking. Makes captures to neglect of the real end of the game. His rank on plan is rather surprising, considering his many errors. This probably due to his having played checkers a greal deal.

I. Many errors. All the pieces wrongly moved to the last, but knight the worst offender. Won 2 out of 14 games with *F*. Extremely little plan; avoids only slightest difficulties; overlooks about half his opportunities to capture; overguards king; little conception of the relative value of the pieces; makes no use of his knight nor does he defend himself from his opponent's knight. For example, in the 12th game, gives pawn to pawn, bishop to pawn, pawn to pawn, fails to take bishop with pawn, queen with queen, and overlooks the fact that his opponent's king is in check. After being beaten several times he came to dislike the game.

J. Made errors with all the pieces to the last game. Won 4 out of 17 with *E*. Moved quickly, except now and then when listless or absent-minded. Sometimes forgot his turn to move. Makes plans but cannot execute them. Exposes his pieces to capture while working out a scheme. Never moves knight without hesitating and counting spots. In last game exposes knight to pawn, bishop to castle, castle to knight, castle to bishop, fails to take pawn with pawn, gives pawn to pawn, and captures his own piece. Fights mostly with a bishop and castle.

K. Many errors, pretty evenly scattered among the pieces. Lost all of 12 games to *C*. Moves slowly; little plan; captures without looking to the result; many "give-aways." For example, in the 10th game, trades castle for pawn, moves up pawn alone and loses it, gives castle to pawn, pawn to pawn, knight to castle, pawn to pawn and trades bishop for pawn.

L. A majority of the errors due to confusing the bishop and castle. Out of 15 games with *B*, lost all but 1. Deliberate, sometimes studying a move for two or three minutes. Watches the board intently and says nothing during the game. Little plan. Habitually runs a pawn clear across the board alone to be captured. Three times moves king out toward the centre of the board alone. Gives many pieces away, but seldom fails to take captures offered. In game 13, gives pawn to pawn, castle to pawn, pawn to pawn, knight to pawn, trades queen for bishop, fails to take bishop with knight, exposes castle to pawn, and king to pawn. Knight little used, and the bishop and castle so confused as to be nearly worthless.

M. Worst subject on errors. No piece was fully learned. Won none out of 12 games with *D*. Exasperatingly slow. Median time about 1½ minutes, and often studied a move 5 minutes. Very attentive, never looking up except to ask how to move a piece. Foresees only the immediate result of his moves. Accomplishes nothing in attack. Devotes all his attention to preventing loss of pieces. Bunches nearly all around the king and moves back and forth with only one piece.

N Never sure of the move of any piece. In last two games, makes the following errors: Moves pawn angularly twice; captures with pawn by moving straight forward; moves knight wrongly seven times;

castle forgotten three times; king too far once; four times makes turns with other pieces than the knight; and castles wrongly. These worse than some of the preceding games, probably because of decreasing interest. Rather slow. Lost 16 of 17 games with his younger brother, *G*. Avoids some losses, but little plan; a vague idea of what to do, but no definite idea of how to carry it out. Many "give-aways," often losing an important piece to a pawn. More intent on accepting pieces offered him than on creating new situations. Did not guard king till told by opponent to do so. On being checkmated is usually surprised and asks how it was done.

With regard to chess as a test of intelligence I may say that it clearly differentiates the two groups, and that so many interesting things came out that I regret not having had more time to devote to it. I should like the opportunity to choose two or three pairs of my subjects and observe them daily in chess or checkers for several months. I believe that the insight gained would amply repay the time expended.

IX. MEMORY.

Memory tests have been in the past rather unsatisfactory. It is practically impossible to get at the pure physiological retentiveness, while if we aim at testing the everyday working memory our results are still more disturbed by interests and habits of apperception. Memory in any case, considered as pure physiological retentiveness, would seem to be of no more than intermediate importance in a study of intellectual differences; more significant than sense differences but less so than the logical and creative processes. The great minds have more often had logical than desultory memories. There must of course be a certain minimum of physiological memory, as distinguished from the apperceptual, in order to make possible a distinctively human intelligence, but above this minimum limit we may have almost all grades of intellectuality according to the manner in which the atoms of experience are united by interest, association and meaning. A desultory memory can give us only the crude materials for genius. It is not till these fragments have lost their separate identity by coalescence into a whole,—by assuming a net-work of relations to one another—that intelligence emerges. So many different lines, of such varying degrees of importance, are open to habits of apperception that with a given amount of plasticity many grades of intelligence are possible. It may give us on the one hand an ignorant hotel attendant, with a memory that enables him to return to each of a hundred guests his own hat, or, on the other hand, a Humboldt, with a tenacious memory for the facts of science but unable (according to his own confession) to quote *verbatim* a single line of literature, either poetry or prose. It is mostly the character of the synthetic operations, combined with emotional and volitional qualities, that distinguishes the two minds. This is little more than to say that memory for the most part is particular rather than general, though there are a few minds that are encyclopædic and retain with little discrimination. For these and other reasons I do not regard my memory tests as of so very great importance. They are as follows:

1. Ability to reproduce a complex geometrical diagram. For this purpose I employed the diagram used by Binet in his own experiments on memory. The purpose of the experiment was explained to the subject and after one minute's exposure of the figure he was allowed to reproduce it, erasing and redrawing until satisfied.

2. Chess moves; see grading on errors, Table X above.

3. Reproduction in writing of a story heard. The story used was about 300 words long. This was a group experiment.

4. Same with another story about twice as long.

5. Oral reproduction of a story read. The subject was given five minutes in which to read and study the selection and then give it orally while I took down his words. This plan was followed to avoid the disinclination that some of the subjects seemed to have for writing. Greater spontaneity was also secured. The story was an interesting Indian legend about 200 words long.

6. Same with another story of about 500 words.

7. Ability to repeat the solution of a simple mechanical puzzle after watching its performance by another. The puzzle consisted of two iron links so made that they could be separated only by being turned in a certain way. My method was to hold the puzzle before the eyes of the subject and after soliciting his attention perform the separation myself slowly by three successive stages. He was urged to look closely and to remember the positions of the pieces in each stage of the solution. If he was then not able to make the separation himself within one minute I showed him again, and so on until the trick was perfectly learned. It is evident that after the first success the memory is partly a motor one, and even previous to such success the visual images may be retained partly through motor associations.

The following table shows the grading for each memory test on a scale of five. The mechanical puzzle gives results at so great variance with the other tests that I have not included it in making the composite ranking.

TABLE XI.
Grading and Ranking on Memory Tests.

	Binet's figure.	Chess moves.	First story heard.	Second story heard.	First story read.	Second story read.	Mechanical puzzle.	Composite ranking on memory
A	4	3	3	3	4	3	3	6
B	3	1	1	2	1	2	2	3
C	2	1	2	2	1	1	1	2
D	2	2	3	3	2	3	5	4
E	3	3	4	4	4	5	5	10
F	5	2	3	2	2	3	1	5
G	1	2	1	1	1	2	3	1
H	5	4	5	5	4	4	1	14
I	4	3	5	5	3	5	2	13
J	5	4	4	4	3	4	3	11
K	3	4	5	4	3	3	2	9
L	4	4	2	3	3	4	2	6
M	3	5	3	4	5	4		11
N	5	5	4	2	3	2	4	8

CHAPTER X. MOTOR ABILITY.

The theory that all mental traits tend to express themselves physically has long been held in one form or another. The moralist has always been reluctant to credit one with the possession of ethical qualities which never give direction to behavior, while recent psychology, with its experiments on muscle reading and its automatographic tracings, teaches that every idea is motor. Neurologists believe that motor activities have a reflex effect on all the functioning of the brain, and the salutary effects of manual training on intelligence give a basis for the theory. Bolton believes that the ability to take on new motor habits represents educability, and that the motor practice curve furnishes a reliable test of mental weakness. (2). Several attempts have been made to correlate intelligence with motor accuracy, rapidity, strength, etc., but with contradictory results. Kirkpatrick finds a positive correlation. Bagley a negative one. Havelock Ellis finds that British men of genius often show marked awkwardness of bodily control. Gesell finds a direct relation between mental ability as judged by the teacher and skill in handwriting. My own subjects are too few and my motor tests not adapted to the working out of mathematical correlations.

1. *The practice curve.* This was the most important motor test tried. The apparatus was a small wooden cup about two inches in diameter set on a wooden handle eight inches long.

At the middle of the handle was attached a string two feet in length, and to the end of the string was a wooden ball of the proper size to fit easily into the cup. The subject grasped the handle, gave the ball a swing upward and tried to catch it in the cup as it fell. Several elements enter into the success. 1. It is a test of visual-motor co-ordination. 2. Much depends upon motor memory, which in turn involves sense discrimination in the field of the "muscle" sense. 3. The higher processes are involved, inasmuch as there are certain points of method to be learned which make the catch much more certain. 4. Attention.

Each subject was given 40 trials with each hand at each visit to the laboratory until 2,000 trials were made, 1,000 for each hand. The method employed was to give 20 with the right hand, then 20 with the left, etc. The visits to the laboratory were not entirely regular, but for the most part were made every other day. The results were reckoned upon the following basis: A catch was scored as 0. If the ball dropped into the cup, but in such a way as to bound out again, the score 1 was given. If the ball simply struck the cup on the side or rim but did not drop in, the score was 2. A complete miss

TABLE XII.

Grading and Ranking on Motor Skill with the Cup and Ball.

	Average daily score for first 8 days. Right Hand.	Rank for Right Hand.	Percentage of inferiority of Left Hand.	Average daily score for second 8 days. Right Hand.	Rank for Right Hand.	Percentage of gain over first 8 days.	Percentage of inferiority of Left Hand.	Average daily score for last 9 days. Right Hand.	Rank for Right Hand.	Percentage of gain over first 8 days.	Percentage of inferiority of Left Hand.	Final Rank on score.	Final Rank on degree of inferiority of Left Hand.
A	24	14	—12.5	50	13	108	1.5	54	13	125	14.8	13	13
B	58	12	3.1	71	12	22.4	—9.6	86	9	48.2	9.3	12	14
C	62	10	9.7	74	10	19.3	10.8	75	10	20.9	12.	11	8
D	26	13	26.9	41	14	57.7	48.7	48	14	84.6	50.	14	1
E	59	11	15.3	75	9	27.1	6.6	88	8	49.1	11.3	10	7
F	78	3	6.4	99	1	27.	3.1	100	2	28.2	5.	2	12
G	68	7	5.8	76	8	11.7	1.3	62	12	—8.8	—30.6	8	11
H	93	1	22.5	95	3	2.	3.1	105	1	12.9	12.3	1	4
I	74	6	21.7	88	5	18.9	1.1	91	6	22.9	6.5	5	9
J	66	9	6.	84	7	27.2	9.5	89	7	34.8	20.2	7	6
K	76	4	17.1	98	2	28.9	18.3	100	2	31.5	17.	3	2
L	90	2	12.2	90	4	0	18.8	98	4	8.8	7.1	4	5
M	68	8	17.1	87	6	27.9	20.6	93	5	36.7	9.6	6	3
N	75	5	25.3	72	11	—4.	11.1	72	11	—4	—6.9	9	9

was scored 3. These numbers were then added together, the lowest score thus giving the best record. The results for each day were kept separate. Record was also kept of the number of times the ball not only missed but was swung far behind the cup at full length of the string. In the same way records were kept of the number of swings as much too short.

The preceding table gives the chief results according to a reverse method of computation. It will be seen that Group II are, on the whole, decidedly superior in this test. *A* and *D* rank so far below all the others as to form a group by themselves. Group II also show greater superiority of the right hand over the left than do Group I. *F* is left-handed but has been taught to write with right hand. The table gives but little idea of the extreme awkwardness of *A* and *D*.

2. *The arrow and trough.* A smooth wooden trough was constructed about 10 feet long and 1 inch wide. A light, smooth wooden arrow three feet long was then made, of a size to fit easily in the trough. The test was to lay the arrow in the trough so as to project an inch and then with a wooden paddle to strike the projecting end of the arrow and drive it to a given point. In these experiments the arrow was to be driven two feet. Trials to the number of 150 were given each subject, 50 a day for three succeeding visits, all with the right hand. The chief aim was to test muscle discrimination and motor memory.

Average deviation is the most important item in the result and the rank on it for the three sets of trials combined is:

GROUP I.

A	B	C	D	E	F	G
10	1	14	11	12	2	9

GROUP II.

H	I	J	K	L	M	N
3	4	7	12	5	6	8

B, *F*, and *H* show least variation in the average deviation for the three trials. *A*, *C*, *E* and *M* show most, and the others are between. There are also wide differences in practice gain. If we rank our subjects on this point we have:

GROUP I.

A	B	C	D	E	F	G
2	9	1	13	4	11	14

GROUP II.

H	I	J	K	L	M	N
12	7	9	5	6	3	8

The lack of correlation among the three separate trials indicates that the results on this test are not very reliable.

3. In order to learn the rate of motivation for some of the larger, more fundamental muscles the subjects were given three trials at running down stairs. A continuous series of six flights of ordinary stairs in the University building served for the purpose. This test was not very satisfactory for the reason that a good deal seemed to depend on how much risk of falling the subject was willing to take. I will give only the grade on a scale of three.

GROUP I.

A	B	C	D	E	F	G
1	1	1	3	3	3	3

GROUP II.

H	I	J	K	L	M	N
1	3	2	1	1	3	2

4. *Learning rhythmic movements.* The series of movements used was a variation of those accompanying the well known words "Bean porridge hot, bean porridge cold, bean porridge in the pot nine days old." It consists of slapping the hands in changing order, either together, on the knees, or against the hands of another person sitting opposite, who goes through the same movements. Some of the subjects had learned in the past series somewhat similar but so far unlike the one used that it is doubtful whether the results were affected.

Results. The subjects fall into three groups. 1. *B*, *C*, *F*, *G*, *H*, *J* and *N* perfected the series in 4 to 5 minutes. 2. *D* and *I* in 9 to 12 minutes. 3. *A*, *E*, *K*, *L* and *M* in 15 minutes and upward.

5. *Steadiness.* The subject was given a book and told to carry it about the room on his head. Though this would seem to be a very rough test, the results are interesting. All were able to perform the feat without great difficulty except three, *A*, *D*, and *I*. *I* could seldom get farther than 20 or 30 feet without letting the book fall, and *A* and *D* not over two or three steps, the book often falling off before they could get started. It will be remembered that *A* and *D* are the subjects so far inferior to the others with the cup and ball. There was also distinct difference in the nervous strain with which the feat was accomplished. Some of the subjects walked about with a smile, the arms relaxed, and step even and regular; others with firmly set jaws, the muscles of the neck tense, the head screwed awkwardly to one side, the arms held rigidly out from the body, the fingers cramped, and with stiff, jerky gait. *B*, *F*, *G*, *H*, *J* and *L* showed the least of this overflow of muscu-

lar innervation, *A*, *D*, and *I* most, while it was quite marked, though to a less degree, with *C*, *E*, *K*, *M* and *N*.

6. *Motor Automatisms*. For a discussion of the importance of motor automatisms as an index of nervous balance the reader is referred to Lindley's study of the motor phenomena of mental effort. (11.) Two of my subjects, *C* and *D*, were quite remarkable in this respect, keeping up continual and countless contortions of body and face, singing or whistling, twitching fingers, shuffling the feet, whispering, clucking, puffing out the cheeks, trilling the lips, corrugating the brows, fingering a pencil, tapping with fingers, getting up, turning on chair, etc. *A*, and to a less degree *B*, *E*, *K* and *N*, were also subject to automatisms. Relative to motor automatisms they may be graded on a scale of five, as follows:

GROUP I.

A	B	C	D	E	F	G
3	2	4	5	2	1	1

GROUP II.

H	I	J	K	L	M	N
1	1	1	2	1	1	2

A, *C*, and *D* are the striking cases. It will also be remembered that *A* and *D* were totally unable to walk with a book balanced on the head, and were ridiculously awkward with the cup and ball; nor could they shoot marbles. *C* is a stutterer and did rather poorly with cup and ball.

On the whole, then, the advantage in motor ability, in so far as it has been observed, lies with the stupid subjects, *D* and *A* being especially deficient. My results, therefore, so far as they show anything on the correlation of mental and motor skill would agree with those of Bagley in supporting a negative correlation.

XI. Individual Sketches. *A*. Age, 10 years 2 months. Weight, 63 lbs. Healthy and without marked physical defects. Of American parentage, son of a carpenter. Has attended school 5½ years and is in 6th grade. His teacher describes him as poor in drawing, but good in all his other work, being specially apt in arithmetic, and delighting in the solution of complicated problems. At school, also, he shows unusual inquisitiveness and desire for explanations. In the tests he takes rather low rank in invention, very high in mathematics, and extremely low in physical dexterity. His many automatisms are noted elsewhere. His awkwardness is well nigh indescribable. Several times he fell off his chair while going through his numerous contortions. Never acquired any dexterity with the cup and ball. In the latter exercise he was not only unable to get the cup in proper position for catching the ball, but never even learned to control the force of the swing. For two or three trials the ball was swung over his shoulder at full length of the string. Then would follow two or three attempts about as much too weak, the ball not rising enough to permit the cup to be placed under it. This same lack of motor control is seen in his inability to shoot marbles, to sing a simple tune, to learn to swim (though he tried almost every day during one summer), to learn complex movements with Indian clubs, or even to perform so apparently simple a feat as walking with a book balanced on the head. He is of lively and sunny disposition, but a little mischievous and even headstrong at times. His expression is lively, his eyes have a happy twinkle, and he often talks jocosely to himself as he works.

B. Age, 11 years 1 month. Weight, 76 lbs. Looks strong but has been ill a good deal. Hearing about ¼ normal, due to scarlet fever at the age of 7. A few months ago he underwent an operation for the removal of an adenoid. Father a successful business man of more than ordinary culture. Of American parentage and able to trace his ancestry back to an English earl of 250 years ago. Has attended school only 2½ years, and in the first of these years only about one-fourth of the time (by reason of illness). Regarded by teacher as possessing remarkable ability. She says his attention is wonderful, sometimes leading him to work until exhausted. The father also testified to the latter trait and related how when lying ill he propped himself up by pillows and covered the bed with books which were read as long as the physician allowed. Uniformly good in the mental tests. He is extremely neat, of fine bearing, cultured manners, and extraordinary command of spoken language. His experience has been broadened by travel and by acquaintance with numerous books. Has associated little with other children and has played few games. Expresses an ambition to graduate in college and university and to become a naturalist. May be described as logical and clear headed.

C. Age, 10 years 10 months. Weight, 73 lbs. Health good. Mild astigmatism and wears glasses. Of English and French descent and of fairly cultured family. In the 6th grade at school. Described by teacher as poor in spelling and arithmetic but talented in drawing and literature. Of flighty attention. This agrees with my own observations. He has quick perception but no will to work at what is not agreeable to his tastes. Of active, nervous temperament. Wants "to do things." Several times expressed dislike for mental tests and preference for the motor exercises. Slender, stutters badly, has many nervous automatisms. His teachers testify that his stuttering is much worse near the end of the school year. Has ambition to become an artist. Greatly interested also in literature and has read several novels. Once recounted to me the story of Dickens's Tale of two Cities. He told it in minute detail, and as he progressed became more and more excited, stuttered, talked rapidly, and showed great bodily agitation, standing up and then sitting down and all the time keeping up numerous automatisms. May be described as imaginative and poetical rather than logical.

D. Age, 10 years 5 months. Weight, 78 pounds. Tall and slender. Slight astigmatism and has worn glasses since he was four years old. Had an adenoid removed two years ago. Takes cold easily. Of cultured, middle-class family. In the 6th grade of school work. Gets his highest school grades in history and his lowest in numbers. Teacher notes the unusual facility with which he comprehends explanations, and his fine memory for all the school exercises. Ranks lower in the puzzles and chess than elsewhere. His attention is spontaneous and flitting. His work is done by brief strokes of attention. Often interrupts his work to talk of other things. Is quick to comprehend a witty remark, is vivacious, has very mobile facial expression. In the physical tests he ranks lowest of all. I have not observed such a lack of motor co-ordination in any other boy. He made little progress with the cup and ball, could not shoot marbles, was slow to learn rhythmic movements, often stumbled and fell, and like *A*, could not walk with book balanced on head. His automatic twitches extend almost to the point of chorea and his frown or smile shows bilateral asymmetry. He starts noticeably at all sudden or sharp sounds. He cannot carry an easy tune, and cannot write without making numerous blotches on his paper.

E. Age, 10 years 8 months. Weight, 55 lbs. Father a respectable Irish laborer. In good health, but undersized. In 5th grade at school. Gets lowest grades in arithmetic and highest in history and geography. In most of the mental tests he ranks below the others of group I, especially in mathematics and the puzzles. Does well with the fables. Is diffident, seldom speaks except when spoken to. Has large and expressive eyes. Is quick to catch explanations, but careless and inaccurate in all his work. Is slightly nervous and exhibits more automatisms than the subjects of group II. Employs rather childish expressions in the written exercises, seen especially in connecting together many sentences with "and." Rather intermittent attention.

F. 10 years 7 months old. Weight, 61 lbs. Father a respectable laborer. In good health. Has attended school 3½ years and is in the 5th grade. Gets "excellent" in all his school studies. His teacher testifies that he does not play boisterously at school like the other children and that during study hours he hardly looks off his books. When his lessons are done he reads. Ranks next to the lowest of group I in the puzzles. He is timid and reserved. Voice is hesitating. Facing a puzzle places his mind in a queer state self-consciousness and embarrassment. He says they make him "nervous." At such times his eyes assume a blank expression, and he seems distracted and unable to pull his thoughts together. The condition is a kind of *intellectual aboulia*. The flow of ideas seems to cease. Takes highest rank with cup and ball, is a swift runner and good at marbles. He is ambidextrous, throws with left hand but writes with the right.

G. Age, 11 years 5 months. Weight, 73½ lbs. Father a respectable Irish laborer, of more than average intelligence. Mother hysterical. Is a younger brother of *N*, but two years beyond him in school work. In school 6½ years and in eighth grade. Ranks uniformly high in all his school work as well as in all my mental tests. In latter is second only to *B*. Has had very narrow experience, never outside of the city of Worcester. Is not willing to leave his books long enough to help his mother with the chores, but leaves them for his brother, *N*, to do. Assumes a kind of guardianship over his older brother, *N*, when they visit my house together. Greatly interested in history and in current events. Logical and clear headed.

H. Age, 13 years 5 months. Weight, 84 lbs. Of a poor Swedish family of little culture. Hearing only ¾ normal. One eye astigmatic so as to be useless for reading. Only in the sixth grade and ranks uniformly low in all his school studies. Better than his group in invention and chess but very low in all the other mental tests. Has played checkers a great deal and his high rank in chess is probably due to this. Has read but three books and can tell little about these. Is good in the motor tests. Has done several kinds of work and plays baseball and football. Is a good swimmer. He is gruff, stolid, obtuse, apathetic, heavy. Very seldom laughs, talks little, and betrays few interests. Never begins a conversation with me and never talks confidentially. Says he will quit school this year and go to work.

I. Age, 10 years 4 months. Weight, 64 lbs. Father a respectable English laborer. Health good. Is in the 5th grade at school. Below medium in all his school work. Has read only two books. Uniformly poor in the mental tests. Shows a preference for the physical exercises. Is active, likes games and is apt at ball and marbles. He is neat in his person and work. He is quiet, reserved, talks little. Speech is hesitating and voice low. Little enthusiasm.

J. Age, 10 years 9 months. Weight, 109 lbs. Obese. Father a policeman of little culture. Irish descent. Health good, but he wears glasses to correct astigmatism. In the fifth grade at school. His teacher finds him extremely dull in all his work, untruthful, resentful, quarrelsome and incorrigible. On the playground he seldom joins with others in the games but prefers to lounge about with one or two companions. Very low in all the mental tests except invention. Fair motor ability. In his apathy much like *H*. Facial expression is stolid, blank, indifferent. Has only read three books. Was never out of the bounds of the city. While belonging to the same general type as *H*, is of decidedly higher grade of intelligence.

K. Age, 10 years 11 months. Weight, 62 lbs. Of an uncultured Swedish family. Health good, but teeth decayed. In 5th grade at school. Teacher gives him lowest rank in all his school work, says he is dreamy, fails to hear or to comprehend her directions, shows little curiosity, troubled or disturbed by nothing, lies, steals, cheats and has little sense of honor. My observations agree with the above. More than once his speech betrayed his low grade of moral concepts. At one time he related without any apparent shame how he "nearly beat the head off" his younger brother because the latter refused to deliver his newspapers for him. When asked if it was right to do that, he answered in the affirmative, on the ground that his brother should have obeyed him. High rank with the cup and ball but low in all the mental tests.

L. Age, 12 years 5 months. Weight, 78 lbs. Father an English laborer of little culture. No noticeable physical defects. In 6th grade at school. Does fairly good work in history and geography. Has read about a dozen books. In the puzzles and in use of language ranks far above his class. Often gave evidence of a certain shrewdness. Not emotional like *C* or *D* and yet not stolid like *H* or *J*. Plays many games well. Specially apt at ball and marbles. Has had much experience in caring for animals, as his father breeds dogs, goats, hares, ferrets, guinea pigs, birds, cocks, etc. He leads an outdoor life and is fairly observant. Not unusual in appearance and his reaction to the tests would lead one to expect from him better school work than his teacher finds.

M. Age, 11 years; weight, 68 lbs. Of well to do and cultured family. No noticeable physical defects. In 5th grade at school. Takes extremely low rank in all his studies, except that he takes pride in the neatness of his written work. Has read only three books and does not like to read. Does, however, like to be read to, and his mother has indulged him in this a great deal. In disposition he is quiet, unemotional, and seldom laughs. He plays games in a half-hearted way and has few close friends. He is an only child and prefers to be alone, often sitting quiet for hours with blank expression. Gets interested in certain simple games (usually such as require little physical movement) and busies himself at them for periods that would bore most children. Health seems good, but physical energy is apparently deficient. All his movements, whether mental or physical are slow. Exasperatingly slow to comprehend explanations. Goes about everything so deliberately as to make one wonder whether he has any perception of the passing of time. Neat in person and of good appearance.

N. Age, 13 years 9 months. Weight, 81 lbs. Hearing only ⅓ normal. Brother of *G*. In sixth grade, though he has attended school since the age of 4 years. His teacher finds him the most stupid pupil she ever had. Uniformly poor in all his studies. Never read a book. Says he can't get the meaning. Enjoys very much having his younger brother, *G*, read to him. *G* has read several books to him and *N* takes great interest in them. Normal, if not super-normal, memory for stories heard. His mother says he remembers better than *G*. In more than one respect *N*'s ability is puzzling. He is almost totally unable to read or spell and yet he has a fairly fluent command of spoken language. He also ranks outside his group in the ability to interpret fables. Greater age may contribute to this result but will not account for it in full. *H*, of nearly equal age, ranks 14 in the fable test. According to his teacher, *N* is stubborn, high tempered, easily offended, and childish in his play. My own observations confirm this. He realizes that he is duller than other children. The father, when trying to teach him, gets impatient and calls him a blockhead. At this the boy goes to another room and cries. Interests extensive enough, but shallow and lacking permanence. He stands in interesting contrast with *H* or *M*. The latter belong to Kraepelin's dull type of sub-normal mentality, while *N* is a good example of the lively type. He has good facial expression and is handsome. In movements he is rather awkward. He is a confirmed bed-wetter.

XII. Summary and Remarks.

1. The following table represents the ranking of each subject in each group of tests.

TABLE XIII.

Ranking on All Tests.

	Invention.	Logical processes.	Mathematical ability.	Language.	Interpretation of Fables.	Chess.	Memory.	Cup and Ball motor test.
A	10	5	1	6	8	7	6	13
B	1	1	1	1	1	1	3	12
C	4	3	4	3	2	2	2	11
D	3	6	5	4	6	8	4	14
E	9	8	7	8	4	6	10	10
F	7	4	6	4	6	5	5	1
G	2	2	3	2	3	3	1	8
H	5	10	10	14	14	4	14	2
I	11	12	12	10	9	11	13	5
J	7	13	11	9	12	10	11	7
K	13	14	12	12	10	13	9	3
L	5	7	8	6	13	9	6	4
M	14	11	14	13	10	14	11	6
N	11	9	9	10	5	12	8	9

2. Group I is superior to group II in all the mental tests, and inferior in the motor tests.

3. The superiority of group I is about the same for all the mental tests except those coming under the head of invention, where it is less.

4. On the whole, the standing of the individual subjects through the separate tests is strikingly uniform. This is only another way of saying that intelligence in these subjects does not show a decided tendency to develop along special lines.

5. Group II discloses no inferiority to group I in the amount of persistency with which problems are attacked. On the contrary, *H*, *J*, and *M* are among the most persistent workers, while *A*, *C*, *D* and *E* show more fitfulness and spurtiness. The latter, to be sure, usually accomplish more in a short period of time than the former in a longer, but their attention is more easily distracted. They more often interrupt a solution to talk of foreign matters, or to engage in some other unrelated activity. The respective methods of work indicate on the part of the latter mental associations that are more volatile, more spontaneous, and based on more subtle resemblances; on the part of the former, associations that are close, matter of fact, and labored.

6. All the subjects were asked (individually of course) whether they preferred to read or to play games. With the exception of *E*, who gave an uncertain answer, all of group I replied that they preferred reading. Every subject of group II preferred games. It would be interesting to know how much a certain innate aversion to physical exercise, or even a lack of encouragement of the same, due to pecularities of the environment, might contribute to the building up or even the creation of interests in such affairs as school work and books. The reverse possibility is also worthy of investigation.

7. Indications of emotional differences, noted elsewhere, are striking and are no doubt closely bound up with the observed intellectual differences.

8. While offering little positive data on the subject, the study has strengthened my impression of the relatively greater importance of *endowment* over *training*, as a determinant of an individual's intellectual rank among his fellows.

In closing, I take pleasure in expressing my great obligations to Dr. E. C. Sanford, not only for assistance throughout the study but also for careful criticism of the entire manuscript To President G. Stanley Hall, and Dr. W. H. Burnham, I am indebted for frequent counsel and advice; to Dr. Fred Kuhlmann for able assistance in the tests, and to him, as well as to Dr. G. E. Partridge, for many suggestions in planning the study and in treatment of the data. For other valuable assistance and for their friendly interest in the work I wish to thank Dr. Theodate L. Smith, Dr. Louis N. Wilson, Dr. W. F. Book, and Dr. A. L. Gesell.

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Vol. 4. Education familiale pendant l'âge d'école. pp. 271.
Vol. 5. Education familiale après l'école. pp. 176.
Vol. 6. Les enfants anormaux. pp. 282.
Vol. 7. Les œuvres d'éducation et de protection de l'enfance. pp. 248.
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Reviewed in Ped. Sem., June, 1906. Vol. 13, pp. 255-256.

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LITERATURE.

Die Experimentelle Pädagogik, Begründet u. herausgegeben von DR. W. A. LAY u. DR. E. MEUMANN. O. Nemnich. Leipzig.

This is practically a quarterly journal, which is just finishing its second volume. It is an organ of a society devoted to the subject of experimental didactics and the education of abnormal children. It is edited by Dr. W. A. Lay of the Karlsruhe seminary and by the well known professor of psychology, Meumann of Zurich, now of Königsberg. The journal marks a distinct advance in the great work of placing education on a scientific basis. In one interesting article Lay urges that already before the establishment of his journal and of the society it represents, this new movement made the philosophical pedagogy as represented by Herbart and Ziller entirely obsolete. The work that the metaphysicians thought was thoroughly done has to be begun again from the very bottom in his opinion. Indeed, so emphatic is Lay's condemnation of the older authorities that he has been sharply brought to book by an able representative of the old school pedagogy of Germany, who insists that all pedagogic experiments are for the most part only frills and affectations of science, that most of them are only very partial aspects of this work.

Of almost equal significance is the founding of *Aussage* by Stern, which we might say is devoted to truth or to the measurements of the accuracy of observation and of description of events. The many technical articles that have been printed here concern themselves with showing pictures or performing actions before children, exhorted before to observe carefully for a limited time, and then having them reproduced in words. The errors are a rich mine and of the utmost practical consequence for the object-lesson method, for every demonstration, for testimony, for the legal age at which a child can bear witness in court, etc. This is another recent movement in Germany which we must reluctantly confess threatens, as does Lay's experimental movement, to take the leadership in child study from this country. If we add to this the third excellent German journal entitled "Eos," with a galaxy of authors and devoted solely to the study of defectives, which is better than anything yet produced in English, we shall experience more keenly the mingled feeling of pleasure at progress and regret that in these respects American investigators are no longer in the van.

In the introduction to the first number of Die Experimentelle Pädagogik, Meumann says that the origin of the development of experimental pedagogy is very like that of experimental psychology. The first experimental pedagogy was more or less hygienic and pertained to health and fatigue. It was represented by Sikorsky (1879), Burgerstein (1891), Laser (1894), Griesbach (1895), and many others since. Somewhat on this basis arose the sense of need of separating feeble children from others in school and this led to the various studies of ability which to-day loom so large in the field of experimental pedagogy. Another contribution came from studies of insanity and yet another from psychology. The technique and economy of learning has been considerably developed for reading and writing, although many of these studies have been made upon adults (see Müller, Steffens, Pentschef, Meumann, Wundt, Cattell, Zeitler, Erdmann and Dodge, Messmer, etc.). Another source is child psychology in the narrower sense. Especially valuable studies have been made in child language, also in the measurements of psychic time, such as rapidity of work at different hours of the day, its relation to fatigue, etc. Another development is marked by Stern, Wreschner and others who have shed so much light upon the accuracies of observation, memory and reproduction and its relations to age, sex, culture, etc. This has an immediate bearing upon object lesson methods of teaching. Everywhere we see the tendency of separating pedagogical and psychological experimentation. Fatigue studies have interested physiologists and psychiatrists; the studies of language have interested philologists; differences of ability interest parents and teachers, and we have valuable studies of memory, and Mayer and Schmid have studied the relations between individual and collective work and between work at home and in school. Lay has given special attention to the elements of arithmetic and orthography. Just what the position of this new departure is in relation to science, to pedagogy, and how independent it is, what should be the proportions of general systematization and detailed technique and accumulation of facts, all these may be left undetermined for the present. Experimental pedagogy is above all things empirical. Seyfert (Die Pädagogische Idee, Leipzig, 1904) makes an original contribution to the goal of education in calling it Durchgeistigung. Now only contributions can be made. We would not concern ourselves with the criticism once made against psychology and physiology that the word "experimental" merely designates a method, nor that it is merely applied psychology. James says it has little to expect from psychology. Meumann thinks it has very much and pleads that pedagogical experimentation is slowly making itself quite distinct from purely experimental psychology because its problems are more complex and are made with practical ends in view. The social aspect of pedagogy is important, but subordinate. Experimental pedagogy does not seek always to reduce all questions to their most elemental form. It is synthetic while psychology is analytic. Its end is not theoretical knowledge of the soul. Individual psychology is on the whole more important than social. Society is an abstraction. It is apparent in Bergemann's treatise that it often rests only on constructive metaphysics, and Natorp shows how it often issues in and rests upon vacant generalities or erroneous affirmations. Of course we must study the social milieu, occupation, the effects of wealth, country and city, co-education, confessional schools, the development of concepts in the child mind comparatively and statistically, and this is in some degree social.

Lay attempts to explain the confusion of pedagogic thought in the past as partly due to the introspective habit which, *e.g.*, made the view of Diesterweg's, whose mind was the acoustic type, while Bormann, his chief antagonist, was eye-minded. Each represented the views that were inevitable for his own mind so long as introspection was the muse of psychology, instead of the observation of children. It is closely related to school hygiene, and to national economy because it seeks to save the most precious of all capital. There must be pedagogical laboratories, and there are in Europe only four; viz., at Zurich, Antwerp, St. Petersburg, and Budapest, the first under Meumann, the others respectively under Schuyten, Netschajeff and the neurologist Ranschburg. There have been the usual objections, criticisms and lack of interest. Didactic experiment is exact school practice controlled by tests and statistics, so that results can be compared.

One of the interesting problems now under investigation by Walleser is on the unification of the methods of teaching modern languages. Here there is at present no end of confusion and conflict of methods. These experiments seek to lay the foundations of some kind of harmony deep and strong by determining for various ages the proportion of acoustic, optical, motor and mixed types of mind. On the basis of this it is hoped methods that are not only unitary but that are demonstrably most economic will be agreed upon.

As to the old Herbartian pedagogics, teachers ought to read and ponder the work of Sallwürck, entitled "The End of the Ziller School" (Zur pädag. Zeitgeschichte, 1904), whose contribution is summed up in the following sentence of Lay's: "However the Herbartians answer in detail the chief points of the criticism of Sallwürck, it is certain that the psychology of Herbart and his pedagogic system and that of Ziller must be now regarded as no longer correct and they must be rejected as the foundation of psychology, pedagogic study and research."

Populäre Schriften, von LUDWIG BOLTZMANN. Johann Ambrosius Barth, Leipzig, 1905. pp. 440.

This is a remarkable collection of twenty-three papers by one of the leading physicists of the world, head of his department in the University of Vienna, and is dedicated to the manes of Schiller, "the unsurpassed master of the description of genuine inspiration true to nature and coming from the depths of the heart one hundred years after his entrance into immortality." The versatility of the author's mind is shown by the great variety of the subjects treated, Maxwell's theory of electricity, the nature of energetics, atomism, the Röntgen rays, together with a discussion of the character and work of Kirchhoff, Stefan, Loschmidt, Schopenhauer, Vaubel, with controversies with Ostwald, account of flying machines, etc. It is a book that really ought to be translated and shows a new side to this great master in his field. The last paper, entitled "The journey of a German professor into El Dorado," tells in a breezy way how one evening after attending a meeting of the Academy in Vienna, he started to San Francisco to lecture at the State University of California. Although he had been in this country before to attend the tenth anniversary of the founding of Clark University, he was again impressed by the high buildings and the intolerable noise of New York, the extortion of the cabman, etc. During his stay in California he made a visit to the Lick Observatory and to the Leland Stanford University; was the guest of Mrs. Hearst, the patron saint. He was made sick by ice-water and humiliated in his efforts to get wine, not only in the transit of trains through states which forbade its sale, but by the secrecy with which he must take it in Berkeley. He records many humorous incidents due to his imperfect knowledge and worse pronunciation of the English language, which he evidently deems the most illogical in its structure and the most impossible of pronunciation of any tongue. He declares that if he had had to make love to his wife in English and said "Ei lowff ju," she would have run away as hens flee from a roaring bull. He narrates how on the long trans-continental trip in American Pullmans with such names as St. Jezabel, Pembina, Vernedal, and the rest, he sought to bewhile the tedium complimenting the baby that lay in the seat in front of him by saying to the mother that her infant looked "äs de tscheild tschises kreist" (as the child Jesus Christ), and that the poor mother was terrified without understanding his attempt at a delicate compliment. He complains that when he had to choose between travelling with closed windows in the extreme heat and becoming as black as a porter from the dust and smoke if the windows were open, he was not allowed to choose the latter without great difficulty and could not make himself comfortable because a lady occupied the section across the aisle. Very humorous is his description of a dinner with Mrs Hearst, the Alma Mater of Berkeley, and how he incurred her evident displeasure by declining the first course of raspberries and even the melons that she herself sorted for him, and then the oatmeal that "Vienna geese" could scarcely eat. After the meal they proceeded to the baroque salon, where he was asked to play upon an elegant piano, the tone of which quite charmed him. He rejoiced to find an elegantly carved guardian angel over his bed which he fancied suppressed at least for that night the asthma from which he was so prone to suffer. "Every room in the university swarmed with ladies whose hats where everywhere—in the washrooms, on the telephone, in the dark chambers; and his own lectures on physics competed with those of Miss Lillian Seraphine Hyde, "eine nicht unebene Dame," who was lecturing on the preparation of salads and deserts. He describes the Leland Stanford University, and says that after the death of their son, Mr. "and especially Mrs. Stanford fell into a kind of religious Wahnsinn." In Europe he delares when an aging lady becomes over tense, she buys a dozen cats or a parrot, but here she calls an architect of the first rank and builds a university that is certain to be a blessing for future generations. After the death of her husband, Mrs Stanford was for a long time alone in the University. He narrates that when one of the professors of economics spoke out against great financial frauds, "the president thought to placate Mrs. Stanford by promptly discharging this professor, but she was 'so mettlesome' that she called him back and reproached the over zealous president." This is probably a Berkeley version of history. His English teacher had not made his pronunciation perfect, and on one occasion he became very hungry and asked in as many ways as he could imagine, that he be kindly informed at what hour and place he could obtain lunch. No one understood what he said, and after varying the phrases and the pronunciation many times and on many individuals and receiving only a gurgle in reply, his appetite got the best of him and he changed his tactics and cried out loudly in the hall, "Lönch, lanch, lonch, launsch, lownch," exhausting every vowel sound in his vocal font. At last one of the many faces turned in wonderment toward him, understood, and said, "Ah, he means 'lunch,' and he then received the necessary directions. All of which shows that, if the author had not been a great physicist, he might have rivalled Mark Twain (as in Innocents Abroad) as a humorist; for he certainly shows a gift of drollery that is remarkable in a Teuton.

Proceedings of the Twenty-Third Annual Meetiug of the Lake Mohonk Conference of Friends of the Indians and Other Dependent Peoples. 1905. Published by the Lake Mohonk Conference, 1905. pp. 228.

How much better the meetings of this association might be made if, instead of so many professional reformers and long-distance talkers, the doors should be opened to those who know the Indian professionally. We have never been able to understand the tabu placed upon the members of the Ethnological Bureau in Washington who have spent their lives in trying to understand the Indian and whose conclusions as to how to train him are not those of mere philanthropists, but of experts. The conference at this famous temperance hostelry, held in the fall and attended by those guests whom the landlord chooses to invite as the season wanes, and which has made his inn known to many who would not otherwise have heard of it, does not represent the most advanced thought on the treatment of the Indians or other primitive people. This ought now to be plainly said and is coming to be more and more widely understood. Without the slightest disparagement of the many excellent, intelligent and very useful citizens who have gathered at these meetings, and cordially recognizing that they have done much to make the Indian problem prominent and to interest the public in a certain way and in a certain degree, it has nevertheless become an essentially doctrinal institution. It is already a grave question whether the imposing consensus of the semi-competent who gather here is not rather intimidating the real progressive movement that is now represented by so many experts. For our own part, we think the time has come when the latter should be gathered in a separate conference in order that the progressives may themselves arrive at a settled consensus as to what is practical. The official or government view of the Indian is very different from that taken by the ethnologist, and many are asking with inceasing insistence why we should spend such vast sums in the scientific study of the Indian and not put the results thus gained in practice, or, in other words, why there is so high and tight a wall between the department of ethnology and the Indian bureau. In other lands each of these sheds light upon, if it does not guide, the way to the work of the other, and this is as it should be.

Die reifere Menschheit, von LEO FROBENIUS. Gebruder Jänecke, Hannover, 1902. pp. 464.

This author again appears with another book for children, so fascinating that he must be ranked among geniuses in conserving in himself the child he was and in being able to open new fields of fascinating interest not without profit to children. This book contains nearly six hundred cuts, which are grouped about seven great themes. First comes the inexhaustible legends about Reynard the Fox, of which it is said there were in the middle ages over a thousand editions printed, more than of any other book. He traces the roots of this story from Japan westward and shows how many other animals have been cast in its rôles. The second theme is on the war of animals and of good and bad men. As the former theme was the last utterance of the old and once far more prevalent under fable, so this shows the development of the culture fable. Here, too, many animals and types of men and even trees and flowers appear. The animal myth in its decline is also shown here in many forms. Then comes the bear festivals, also universal and manifold, but with fundamental unity of form and interest; fifth, the hunting stories, with no end of traps, pitfalls, hunts of different animals by tribes, civilized men, kings and emperors, and with illustration of hunting life in antiquity, especially Egypt. Then comes the great theme of the war between animals and man; how the enmity arose, how it was expressed, how man slowly made himself lord of the animal kingdom; and lastly the story of a truce and then friendship and at last domestication. The last chapter is entitled "Human culture and the highest values." This is devoted largely to education among savages and that of Egyptian, Chinese and other monarchs, and sheds light from new sources upon the history of education.

Pflanzer und Jägerleben auf Sumatra, von EDUARD OTTO. Wilhelm Süsserott, Berlin, 1903. pp. 185.

A German hunter visited Sumatra and, obtaining a license to hunt, proceeded to shoot almost everything that came in his way,—elephants, rhinoceroses, orang outangs, bears, leopards, snakes, argus hens and many other birds of beauteous plumage. He has himself photographed in the act of shooting, arranges his trophies, photographs himself beside the corpses of his victims, and gives us pictures of his rifle, his pitfalls, his hunting attendants, himself in his tent, enjoying choice brands of wine and beer, etc. Judging from this book, there was no scientific, commercial, or any other purpose of his trip that was dominant save only the lust to kill, which here has one of its most offensive and barbaric illustrations. He does not appear to be even a collector for any one but himself, and there is indirect evidence that he does not even understand the best methods of preparing his pelts or mounting his birds. Such a book seems to be in diametrical opposition to the new spirit of sympathy for the more important, larger, and beautiful forms of animal life now so fast vanishing from the world.

Educational Work. Edited by W. H. Holmes, Jr. Vol. I, No. 1, Jan. 1906, pp. 47; No. 2, Feb., 1906, pp. 51-96; No. 3, Mar., 1906, pp. 97-144; No. 4, Apr., 1906, pp. 145-192. Published by the Educational Work Company, Worcester, Mass.

Educational Work represents the Batavia system, which strives to make headway against the appalling fact that in certain states nearly fifty per cent. of the pupils enrolled in the public school never get beyond the fourth year's work. The nation ought to rise and ask the reason for this condition. The Batavia system is an effort to combine class with individual work. We do not think its author has ever given quite sufficient credit to the pioneer work which Superintendent Search did first at Pueblo and later at Holyoke. In the latter place the system was combined with election in high school grades in a very interesting and suggestive way. This journal is devoted to the interests of individual instruction in different departments of study. While this is the core, it discusses very many other themes, especially those which have as their general aim the keeping of boys in school. It seeks also to keep tab upon the different methods of individual work in various places where it has found more or less ingress. Batavia has won much renown and attracted countless visitors, and the superintendent has been sagacious enough to magnify his work, and that in a wholesome way which deserves on the whole more and not less attention than it has already received.

The School and its Life. A Brief Discussion of the Principles of School Management and Organization. By CHARLES B. GILBERT. Silver, Burdett & Co., New York, 1906. pp. 259.

Here we have one of our most successful American superintendents collecting the results of his experiences in two dozen brief chapters on such topics as the morale of the school, the individual child, department teaching, grades and promotion, freedom of the teacher, teachers' meetings, preparation, the superintendent, principal, legislation, relation to the home, etc. The chapters are unpretentious and unstudied. There is no display of erudition in learned footnotes or references, but the author has evidently attempted to put in concise form the faith that is in him and the general experiences of a life very rich educationally. The author is not only one of the most able, progressive, and in every other way admirable superintendents America has yet produced, but he appears to his friends to have been the victim of one of the most atrocious, persistent, and probably baseless persecutions to which any man was ever subjected. That despite all this he should have maintained his personal happiness and complete philosophical repose shows qualities that rank even higher than those of a successful educational administrator. There is, of course, no trace in any way of all this in his book.

Pflege und Entwicklung der Persönlichkeit, von Prof. Dr. LUDWIG GURLITT, Oberlehrer am Gymnasium zu Steglitz. R. Voigtländers Verlag in Leipzig, 1905. pp. 53.

This little book contains the address on "Personality," which so stirred up the German philogists and teachers at their forty-eighth session at Hamburg, arousing, especially, the opposition of those who deny the possession of personality to children, youths and maidens, and even to women. It failed to please also the ultra-pious, whose ideal personality is the devout Christian, and who were shocked at the thought that childhood might have a personality all its own, the unity of all child-qualities in their completion and peculiarity as such, — a personality quite as wonderful as that of the man. They who have been so long accustomed to see personality only at the goal of human evolution could not easily be brought to perceive it in the golden beginning. They forgot that each epoch of the life of man has its own personality, of equal value, too, with the others. They denied personality to the child, and yet were staggered by the request to determine the age at which a Luther, a Goethe, a Schiller, a Bismarck became personalities.

Professor Gurlitt's word is one of the most inspiring that has come from over-sea for a long time. It makes the dry bones of certain "child-study" sepulchers rattle to the cry, "Be not afraid of the child; he is, indeed, the very father of the man." Outside of sickness and disease, the child is good, as the race is. It has its own personality, as have the races, for it is older than they, and bears in itself more of the might of heredity. The Hebrew and the Negro go back beyond the Pyramids and the records of Babylon, but the child began ages before them. Its instincts, some of them at least, are older than man himself. If it does not grasp life and the things of life with adult senses, it has Argus eyes and Gygean hands that see and touch the whole world. By virtue of its own peculiar personality the child is capable of doing instinctively and greatly much that man accomplishes only with much labor and distress.

It were folly for the teacher to ignore the personality of the child, and to try to shape it after some adult-chosen norm or model,— "the 'good' normal child is about as unpersonal as a trained poodle." The child personality should be the basis of all education, and the teacher must be a personality in order to educate another personality. The teacher must remember, too, that personality has really little to do with knowledge and so-called culture,— it is greater than either and begins before both. But, more than all, childhood has something in greater degree than all other epochs of life. With double force we can apply to it the words spoken by Grillparzer of youth : "Age. . . . has knowledge and wisdom, but childhood is holy."

This appeal for reverence for the personality of the child ought to be read by every parent and by every teacher. In the child we face the most gracious personality human evolution has so far created, and such marring as falls to its lot is largely "the invention of men."

ALEXANDER F. CHAMBERLAIN.

Lessons for Junior Citizens, by MABEL HILL. With an introduction by Albert Bushnell Hart. Ginn & Co., Boston, 1906. pp. 234.

Professor Hart, who is sponsor for this book, as for so many other things of a very varied character, thinks young children, especially boys, ought to know more about the local government under which they live; that they should be taught much about tricks and thoughts that are too common, and that as the subject is not of thrilling interest in itself it should be put in story form, and everything should be copiously illustrated; that there should be a special glossary explaining such words as adult, arrest, athletics, bail, catch basin, code, court, drainage, felony, parks, police, statuary, treason, test, tramp, tunnel, trial, verdict, witness, and many others. Photographs are of great conventions, of sample immigrants, old-fashioned houses, streets, country town meetings, dams, good and bad homes, truant bedrooms, school gardens, playgrounds, dumpers, street cleaning, a fire, etc. It is a good book, without doubt, in its idea, but the story method of its execution seems to us to be fatuous and pedagogically absurd, incumbering the virtue there is in it all, and that to a high degree. The quality of the pictures might easily be improved, but the thing chiefly needed is the plainest, most condensed, objective statement of facts and not a cumbersome twaddle story incorporating them. Cannot the book be revised and more information incorporated in less space?

Luminous Bodies Here and Hereafter. (The Shining Ones.) By CHARLES HALLOCK. The Metaphysical Publishing Co., New York. pp. 110.

This member of the Washington Biological Society here seeks to explain "the inter-relation of the intellectual, celestial and terrestrial kingdoms and of man to his Maker. He begins with a poetical invocation, and in the second chapter entitled "L'Envoy," claims to start from H. R. Rogers' theory of physical force, illustrated by Oliver Lodge's corpuscular theory. He then discusses vito-magnetism and soul-aura; then tells us the color effects of the emotions; describes the electrical body of the future life and supreme force and its potential agent, the philosophy of eternal felicity and of religion; discusses the relation between evolution and the future life; and ends with a creed a prayer and commendatory letters from various writers. All in all, it is a strange melange of oriental ideas, Biblical literature, folklore and modern science, the general conclusion of which is that electricity confirms the doctrines of Jesus, of the immortality of the soul, Judgment Day, evolution, and about everything else that has been widely and strenuously believed, whatever its nature.

Applied Sociology. A Treatise on the Conscious Improvement of Society by Society. By LESTER F. WARD. Ginn & Co., Boston, 1906. pp. 384.

This work with the author's previous publications make up a comprehensive system of social philosophy, the parts of which, we are told, are consistent each with the other and are progressive. It claims to be practical, never losing sight of the end or purpose of conscious effort and is a reaction against the philosophy of despair. It seeks a remedy for the general paralysis creeping over the world and which a narrow conception of the law of cosmic evolution increases rather than diminishes. It would remove the embryo of determinism. If it be objected to this book that it marks little advance beyond the author's Dynamic Sociology, the reply is that there has been little progress in the last twenty-three years, but that most attempts to advance have been virtual failures. Everything rests upon increased knowledge and its socialization and application. The intellectual heritage of mankind must be distributed equally to all. The author has evidently derived a great deal from France, to which most that is new in this book can be traced.

The Olympic Games at Athens, by JAMES E. SULLIVAN. (Spaulding's Athletic Library, No. 273.) American Sports Publishing Company, New York, 1906. pp. 185.

This is a cheap and unpretentious, but really very valuable and interesting book, copiously illustrated, and gives the reader a very good picture of what actually took place in connection with the Olympic games, beginning April 22nd last, at which Amercans won most prizes. Nearly a hundred thousand people were in or close about the stadium at the opening of these remarkable festivals, which add a great stimulus to sport on the continent and in this country. All agreed that as a whole these exceeded all the other Olympic games, including those at Paris in 1900 and at St. Louis in 1904. The interest which Greece herself takes in these games, and especially in the great Marathon race, is almost pathetic, and there can be little doubt but that the sentiment of the world would have preferred to see Greece herself win instead of coming in fourth and giving the first place to Canada.

Congress of Arts and Science. Universal Exposition, St. Louis, 1904. Edited by Howard J. Rogers. Vol. IV. Physics, Chemistry, Astronomy, Sciences of the Earth. Houghton, Mifflin & Co., Boston, 1904. pp. 759.

The departments contained in this volume represent some of the very best work of the association and bring together some of the most eminent names of foreigners as well as of Americans. Among the former we find such names as Rutherford, Moissan, Sir William Ramsey, van't Hoff, Cohnheim, Zirkel, Penck, Mitsukuri, Arrhenius. One of the most popular and unique addresses is that of the last, describing the artificial cultivation of snapping turtles in farm ponds, in Japan. Not only they, but goldfish, carp, eels, mullets, salmon, oysters, clams and various other marine creatures are cultivated extensively and with profit, and the diagrams explain copiously the methods by which this is done.

Greek Theories of Elementary Cognition from Alcmaeon to Aristotle. By JOHN I. BEARE. Clarendon Press, Oxford, 1906. pp. 354.

This work will be a godsend to all who have to teach or study the history of perception and cognition. The writer has carefully compiled all characteristic utterances of the Greek writers down to Aristotle on vision in the first chapter. He then takes up the ancient psychology of hearing, smelling, tasting, touching, in successive chapters. In the second part he first treats sensation in general, its common and peculiar features; then in the third part the sensus communis, and with this the work ends. Marginal notes epitomizing everything greatly ease the way of the reader, and although the index of topics and of Greek words is carefully made, there is no index whatever of the subjects and chapters. It is a work which ought to be in the hands of every student interested in the subject.

From a College Window. By ARTHUR CHRISTOPHER BENSON. G. P. Putnam's Sons, New York, 1906. pp. 365.

We have here a somewhat quaint collection of what might perhaps be called quiet twilight meditations, by a fellow of Magdalen College, Cambridge, England, who has taught some twenty years and has apparently retired quite out of conceit with his profession because the results of his teaching have been so unsatisfactory to himself. And so he rambles on through eighteen chapters, on growing old, books, conversation, art, egotism, education, authorship, criticism, priests, ambition, the simple life, games, spiritualism, habits and religion. While there is nothing striking in the book, it will be a pleasant pastime for a vacation afternoon and rather suggests a hammock under the trees and the time of day between a hearty midday meal and a siesta.

The Psychology of Reading. An experimental study of the reading pauses and movements of the eye. By WALTER FENNO DEARBORN. Archives of Philosophy, Psychology, and Scientific Methods. Edited by J. McK. Cattell & Frederick J. E. Woodbridge, No. 4, March 1906. Science Press, New York. pp. 134.

This contribution is a valuable scientific document, summing up as it does the results of the experiments, now many, on the physiology and psychic activities involved in the act of reading. This line of work was invested with a sudden new zest a few years ago by the demonstration that in moving along the line the eye leaps and pauses several times in alternation. All these studies have an important bearing upon the practical problem of teaching reading.

Le Réveil au Pays de Galles, par HENRI BOIS. Société des Publications Morales et Religieuses. Toulouse, 1905. pp. 613.

This is a valuable study. It describes first the character of religious work in Wales in general, and gives a sketch of earlier revivals. An interesting chapter is on the cause and antecedents of the great revival of last year. The Torrey mission is described; but perhaps most interesting of all are the chapters devoted to the description of certain individual revivalists — Evan Roberts, Mrs. Jones, Sidney Evans, Joseph Jenkins, and others.

The Transformation of Hawaii. How the American Missionaries gave a Christian Nation to the World. By BELLE M. BRAIN. Fleming H. Revell Co., New York, 1898. pp. 193.

The sixteen chapters of this little book are interspersed with a dozen illustrations, Hawaiian songs, and bring the history of this country down to July 6, 1898, when the islands were formally accepted by the United States. The earlier chapters trace in outline the history of the islands, describe the fire palace of Pele, the work of Henry Obookiah, the story of Kapiolani, the overthrow of idolatry, the great awakening, etc.

F. C. Noll's Naturgeschichte des Menschen. Fünfte Auflage. Besorgt von H. REICHENBACH. Ferdinand Hirt, Breslau, 1905. pp. 120.

This little book is essentially what used to be taught under the title, "Anatomy, Physiology and Hygiene." The title "Anthropology" in the English sense is justified only by the last section which deals with the races of men, their geographical distribution, something of their cult, being, like all the rest, copiously illustrated.

Report of the Superintendent of Indian Schools to the Commissioner of Indian Affairs for the Year ended June 30, 1905. Government Printing Office, Washington, 1905. pp. 34.

The reports of the superintendent of Indian schools are very fond of contrasting the old life of the Indians with their occupations when they have been forced to take up the white man's burden. The goal of the government is to make each Indian boy and girl self-supporting, but even this end it is now certain could be reached by developing indigenous industries.

Standard English Classics Series. Ginn & Co., Boston, 1906.

The Pilgrim's Progress. By JOHN BUNYAN. With notes and a sketck of Bunyan's Life. pp. 119.

Selections from Spencer's Faery Queene. Books III., IV., and V. Edited with introduction and notes by Mary E. Litchfield. pp. 268.

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MORAL TRAINING IN THE SCHOOL.

A COMPARATIVE STUDY.

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Moral Education has received much attention from American Educators in recent years. There is general dissatisfaction with the moral results now attained through the schools, and an earnest, persistent inquiry is being carried on as to how these results may be improved. An important step towards furthering this inquiry seems to be to make a comparative study of what is actually being done for moral culture, directly and indirectly, through the public schools of different countries. It is the purpose of this study to investigate the subject as far as the German, French, English and American educational systems are concerned.

That this investigation is beset with serious difficulties and is subject to important limitations is at once obvious. In the first place it is impossible to measure the contribution of one system of education to moral training in terms of that of another. Hughes puts it admirably when he says: "Each system of education can only be understood in its own setting. Each is an expression of its nation's genius; it is characteristic of its people. . . . . The habitat of each system is fixed; it is an indigenous product. Consequently it is not only unscientific, but it is impossible to measure comprehensively any system of national education in terms of another." (14, p. 387.)

Again, it is utterly impossible to analyze an educational system into its elements and say that each element will produce a definite result in the lives of its pupils. This is doubly true of those features of the system which count most for moral training. "The finer elements, the more ethical and spiritual factors in national culture defy the balance of the analyst and the scalpel of the anatomist. They are susceptible to no quantitative tests." (14, p. 387.) That moral influences are at work is evident; but it is equally evident that the character of many of them, the way in which they work, and the results which they will produce cannot be determined accurately.

Moreover, in any educational system no two schools or even classes stand for exactly the same moral influences. This is, perhaps, more evident in England and America, where courses of study and training of teachers are not uniform and where more is left to the teacher's initiative, than in France or Germany. But the same must be true even of the most fully centralized system. The individuality of the teacher cannot be wholly obliterated. It must impress itself on his work, whatever the course of study he may be required to teach.

Nor is it possible to reverse the process and analyze the characters of pupils on leaving school with a view to tracing the different elements to their sources in the school life. Character is an infinitely complex thing. It does not yield to minute dissection. Only its most general features can be distinguished, and even these cannot always be traced to definite causes. Dr. Partridge made a careful study of a pair of twin boys nine years old. They had been brought up in the same home and had been, as nearly as possible, subject to the same educational environment. In physical features they were so nearly alike as to be indistinguishable to a casual observer. Mentally and morally they exhibited marked differences. One was less careful, less obedient, less dependable, less emotional, less serious, less sympathetic, less affectionate, more impatient, more given to teasing than the other. Galton cites twenty cases of twins where there was striking physical and mental differences from the first. (7, p. 216.) There exist unaccountable, but immensely important, initial differences in temperament, emotional range, mental and moral initiative, sympathy, tact, etc., which make different children react very differently to exactly the same educational environment. Moreover, the home training of the child before entering school, and its entire out-of-school environment after its school life begins, exercise an incalculable influence in the same direction. It is a fact which must be reckoned with in moral training, even more than in intellectual, that school life has a different meaning—a different content—for every child.

But in spite of these difficulties there are certain things which can be done in the way of such a comparative study as is here proposed. It is possible to examine the religious and moral instruction which is required by central authority in some of the systems under consideration. What is taught with a distinct moral purpose? How is it taught? What is its relation to the lives of the pupils? These are questions which admit of fairly definite answers.

It is further possible to point out, in the schools of any country, certain features which are truly national, notwithstanding local diversities, and which are, in the light of human experience, of special significance for moral education. These are indirect moral forces of the school. To be sure one cannot state the effects which these will have in any particular school or with any particular pupil. But he can indicate results which they tend to produce under ordinary conditions—conditions which prevail in the majority of schools and with the majority of pupils. However, the individuality of the teacher and the individuality of the pupil—the two most vital factors in moral education—must remain, for the most part, beyond the scope of this study.

MORAL TRAINING IN GERMAN SCHOOLS.

No provision is made for formal instruction in morals in German schools. There is, however, in every grade of all German schools below the universities, very definite and very direct instruction in religion. This will be discussed later.

Let us first consider the indirect contribution of German schools to moral training, the contribution made through the regular organization of the school and the routine of school life.

But before proceeding to this it is necessary, for the sake of clearness, to make a few statements concerning the German school system. There is no national school system in Germany; each state has a system of its own. Since Prussia is by far the largest state, and since its school system largely dominates those of the other states, the Prussian system will be considered in this study. There are two distinct classes of schools in Prussia, the *Volkschulen*, or people's schools, and the higher schools. The people's schools are free and are adapted to the needs of the humbler classes. They admit pupils at the age of six, and offer an eight year course in such subjects as are supposed to fit for citizenship, and for the commoner occupations of life. The courses of study are prescribed by the state, as is also the preparation required of teachers. The higher schools charge tuition, and are intended for the higher social classes. They receive pupils at nine, after they have had a three year preparatory course, and offer either a six or nine year course. This course, if of the *Real* type fits for commercial life or for the higher technical schools, and, if of the *Gymnasium* type, fits for the university and professional life. Part of these higher schools are state, part city and part private institutions; but the curricula are outlined for all by the state, and all teachers must be certified by the state.

What, then, are the most important features of German schools which contribute indirectly to moral training?

1. Most of the boys and many of the girls in German schools never come under the influence of women teachers. Of those who do, many are under their influence for a relatively short time. In the higher schools for boys all teachers are men. In the higher schools for girls, of which there are hardly a fourth as many as for boys, the teaching force is about equally divided between the sexes, though the more important positions are occupied by men; the head teacher and one other must be men. The people's schools, wherever practicable, are organized for boys and girls separately. There are thus schools for boys only, schools for girls only, and mixed schools. In the country about seven-eighths of the schools are mixed, in the cities about one-third. Women are allowed to teach in girls' schools, in mixed schools, and in the first and second classes of boys' schools. In 1901 almost 85 per cent. of the teachers in the public schools of Prussia were men. It is thus seen that nearly all of the teachers in the boys' schools, most of them in the mixed schools and many of them in the girls' schools are men. (20.)

The significance of this situation for moral education must remain more or less an open question, even when much more shall have been ascertained than is now known concerning the psychology of sex. But there can be no question that it cultivates certain traits of character which we are in the habit of calling masculine, and represses others which we call feminine.

But what are the distinctively masculine and what the more distinctively feminine traits of character? According to Geddes and Thompson, who have referred the whole question of sex differences to a biological basis, "The more active males, with a consequently wider range of experience, may have bigger brains and more intelligence; but the females, especially as mothers, have indubitably a larger and more habitual share of the altruistic emotions. The males, being usually stronger, have greater independence and courage; the females excel in constancy of affection and in sympathy." (8, pp. 270-271.) Professor Patrick, in a brief summary of sex differences, concludes that in her moral qualities woman represents higher evolution than man. This is in harmony with the position taken by Havelock Ellis that woman represents the type of the future humanity better than man. "This is notably true," Patrick goes on to say, "in respect to her altruism, charity, sympathy and pity. Woman's greater humanity, philanthropy, conscientiousness, fidelity, self-sacrifice, modesty and patience, as well as her lesser disposition to crime, are qualities which separate her farther than man from the savage." He concludes, on the other hand, that woman does not have as high a conception of truth as man, but looks more to the immediate good to be attained. (26, p. 219.) Havelock Ellis points out that woman is more dependent on the opinion of others, strives more to please, than man; also that self-sacrifice appeals to woman more strongly than the sublimity of truth. (6, pp. 185-187.) Dr. Helen B. Thompson concedes, from her experimental study of the mental traits of sex, that men are more frank than women. She also agrees with other writers that "The religious consciousness is more prominent among women than among men." (43, p. 168.)

Granting these sex-differences, upon which there is most general agreement, the predominance of male teachers in German schools stands for the cultivation of egoism rather than altruism, of selfishness rather than self-sacrifice. It lends support to stern and rigorous discipline. It tends to cultivate courage and regard for truth. It emphasizes law, authority, force, as motives of conduct rather than love and desire to please the one in authority. It stimulates independence and iniative rather than their opposites.

2. Militarism, which is so marked a feature of German character, exercises a profound influence on German schools. To quote Russell: "Germany is nothing if not military. The school system is pervaded by the military spirit; many of the teachers are reserve officers, most of the pupils hope to be, and all know that army service awaits them at the end of the school days." (39, p. 121.) Russell is speaking particularly of the higher schools, in which the influence of militarism is especially strong. Completion of a six year course in one of these schools carries with it the privilege of serving but one year in the army, the privilege of living outside the barracks during this year, special opportunities for promotion in the reserve force and marked social advantages. A German scholar said to me recently: "Boys go to the higher schools, not for an education, but for the sake of the military privileges which they hope to secure." It is in these schools, also, that the reserve officers mentioned by Russell—five or six thousand in number—are engaged in teaching.

But in the people's schools, too, the military spirit is strong. Until recently two years of military service, now reduced to one for graduates of normal schools, were required of ablebodied male teachers in these schools. Their military training gives these teachers the military attitude towards their work in the schoolroom. The fact that the fathers of the pupils have served two years in the army puts the home in sympathy with this attitude.

Under these influences a precise military air pervades the entire school system and an exacting military discipline prevails. These require prompt, unquestioning obedience. They emphasize strict attention to the task in hand. They cultivate respect for authority. They magnify the office of the teacher and intensify his official influence. On the other hand they have little sympathy with the trivialities and weaknesses of child life. They emphasize a perfect organization more than individual differences. They repress rather than cultivate moral independence and initiative. They tend to prevent those amiable relations between teacher and pupil which sometimes have great moral value for the pupil. To quote Russell again: "Good masters have remarked to me—and I am inclined to credit the statement—that the average schoolboy considers an amiable teacher as a prodigy, fit only for a girl's school." (39, p. 211.)

3. German teachers receive most thorough professional training. Speaking of public school teachers, Hughes says: "The most thoroughly trained teacher in the world is admittedly the German. . . . The teacher's knowledge of the history and philosophy of education is very thorough and sound. . . . The doctrines of apperception and interest, together with the formal steps, are often to be observed. . . . In no country in the world is the teaching on so sound and philosophical a basis." (14, p. 179.) According to the same writer: "The secondary teachers of Germany have no peers. They are without doubt the finest body of teachers in the world." (14, p. 256.) Teaching is not a makeshift but a profession with the German teacher. He prepares for it and enters upon it as his life work. The state provides that this preparation shall be long and thorough. If one would teach in the higher schools he must first complete one of the nine year higher school courses. He then spends at least three years in university study, largely special work calculated to fit the candidate to teach a limited group of subjects. This is followed by the State examination. If the candidate passes this, he enters upon a two year pedagogical course—one year of it theoretical and one year practice work. He is then ready for appointment to a regular position in a higher school, which appointment comes to the average teacher in Germany after nearly six years of waiting, spent usually in assisting or tutoring. The teachers in the public schools are required to have had six years of training,—three years of it distinctively professional—after having completed the course which they aspire to teach.

This means that German higher schools give a more rigorous and exact intellectual training than any other schools in the world give to pupils of the same age. Herbart, and many others since him, have pointed out the value of the regular work of the school in developing such moral qualities as accuracy, thoroughness, truthfulness, conscientiousness, persistence. It means, also, that because of superior professional training German teachers as a body make few mistakes, according to German pedagogical ideals and methods, in management, discipline and teaching—few of the common pedagogical blunders, some of which are positively immoral in their influence upon pupils.

4. The German teacher *instructs* his pupils. He does not conduct a recitation in which he calls upon the pupils to recite a previously assigned lesson. There are not alternate periods of preparation and recitation. There are consecutive periods of instruction, each an hour long, ranging from 22 to 32 per week. There is home work in certain subjects—little in the people's schools, very much in the higher schools—but this work is looked upon as a means of fixing in the minds of the pupils instruction already given, rather than as preparation for a recitation yet to come.

All this is important for moral training in that it emphasizes the office of the teacher. It brings the pupil into contact with the teacher more and the text-book less than the recitation method. It makes the pupil more ready to accept the teacher's statement without question. On the other hand it makes him less dependent on his own efforts. It tends to weaken the pupil's self-reliance and initiative, moral as well as intellectual, or at least to leave these undeveloped.

5. Games and play occupy a very insignificant place in German school life. Practically all foreign students of German education call attention to this. "Seldom are children allowed to run and play with freedom in the school yard," observes Seeley, speaking of the public schools (41, p. 81). In his chapter on secondary education in Germany, Hughes writes: "German lads rarely play. The playground is very small, and divided into little plots for each class. The games occasionally played are of a very mild character. German schoolmasters do not like to see their pupils perspiring. . . . . The German lad has no school games. . . . The boys do not take kindly to them." (14, pp. 247-248.) According to Russell, what the Germans consider ample playground for the higher schools, is really little more than standing room. He adds: "I am told that there are field sports but I have seen none of them save a flimsy attempt at football, a recent importation from England. The fact is there is no time for sports as we know them. . . . There is as little time for in-door diversion as for sports." (39, pp 208-209.)

In the light of what is now known concerning the educative value of play, there can be no doubt that this lack of play in

German schools is of great significance. It is a failure to utilize one of the most potent forces for the cultivation of fundamental, social and personal virtues. The games of school children stimulate respect for the rights of others, co-operation, loyalty to the social group. On the other hand they may be used to develop courage, self-reliance, self-control, individual initiative and honesty. The real significance of play in developing character will appear more clearly when the contribution of English schools to moral training is considered. It is Germany's misfortune that she is only beginning to recognize the value of out-door games and to introduce them into her schools.

Other features of German schools, such as large classes in the people's schools and uniformity of discipline throughout the nine year course of the higher schools, exercise indirectly a strong influence on character.

It now remains to consider the religious instruction of German schools.

There is throughout Germany general sympathy with religious instruction in the schools. It has existed for centuries, first as an institution of church schools and later, when the government took upon itself the responsibility for education, in state and city schools. The people have come to look upon it as a matter of course.

The plan of instruction for Prussian higher schools, issued in 1901, states that the aim of religious instruction shall be "to develop, through education in God's word, strong Christian characters, which, because of their knowledge, their conduct, and especially their interest in the church life of their respective communities, shall exercise a strong Christian influence." (21.) This may be expressed in a word as Christian leadership. The aim of religious instruction in the people's schools may, on the other hand, be expressed as Christian citizenship. In both, however, faith and dogma are more emphasized than conduct; the religious rather than the ethical elements of Christianity are kept in the foreground, though the ethical are not omitted.

The fact that church and state are still closely connected in each of the German states, and the additional fact that there are only three religious sects, Lutherans, Catholics, and Jews, which have any considerable number of adherents, makes it comparatively easy to prevent sectarian prejudices from interfering with the teaching of religion in the schools. The state church is Lutheran in the northern and central states, including Prussia, and Catholic in the southern and eastern; and the official religious instruction corresponds. But if there are twenty-five or more pupils in a given community, whose parents are adherents of another faith, special provision is made by the state for their instruction in that faith. If there are fewer than twenty-five such children, they must be provided by their parents with special instruction under a teacher who is acceptable to the state. The points are: (1) that every pupil is expected to receive instruction in religion, (2) respect must be had for the religious preferences of the parents, and (3) this instruction must be given by an approved teacher.

In the people's schools instruction in religion is given the first period in the morning, three days per week the first three years of the course and four days each of the succeeding five years. This means that a little more than 13% of the entire school time is given to religious instruction. This instruction is given by the regular teacher, who has had special training for it in his three year professional course in the teachers' seminary. Here he devoted four hours per week for two years and two hours per week for one year to the study of religion and methods of religious instruction, and to observation of religious teaching in the practice school. The most emphasized feature of the instruction is Bible study. The first two years this is given in the form of stories narrated by the teacher, then selected stories written in simple language are read by the children, and finally, during the last four or five years, the entire Bible or an expurgated edition of it is read in the class. Teachers favor the expurgated editions, but are generally opposed in this by the church. The Bible study aims to impress especially the "History of Redemption," but also to familiarize the pupil with Jewish and Apostolic history. The divisions of the Bible and the names and order of its books are learned. Many Bible verses are committed to memory. Luther's Shorter Catechism also occupies, from the first, a prominent place in the instruction. This consists of five parts, (1) the Ten Commandments, (2) the Apostles' Creed, (3) the Lord's Prayer, (4) the Sacrament of Baptism and (5) the Sacrament of the Lord's Supper. The pupil is required to learn by heart the first three parts, including Luther's comments, and the fourth and fifth parts without these comments.

Many hymns are committed to memory, this work extending throughout the entire eight years of the course. Also simple prayers are learned and used in the opening and closing exercises of the school. The church calendar is studied, and church history in an elementary way, the chief attention being given to the Reformation. According to Schmidt's encyclopedia, the child leaves the people's school at the age of fourteen with a memory stock of at least 350 Bible texts, 35 Christian hymns, the five articles of the catechism, and the 73 responses of his confirmation book.

In the higher schools all pupils are required to study religion three hours per week, the first year, and two hours per week, each of the succeeding eight years. The period usually devoted to this subject is, as in the people's schools, the first in the morning. The religious instruction may be, usually is, given by two or more teachers, each of whom also instructs in other subjects. Russell cites the Friedrich's Gymnasium of Berlin as having 24 teachers, nine of whom teach religion. In every case the teacher of religion must have made a special study of this subject in his university course, and must have made it his major or minor in the examination which admitted him to the position of teacher. Many of these teachers prepared originally for the church and have had extended theological training.

In general outline the course of study used in Prussian higher schools does not differ materially from that required in the people's schools. It is, however, much more comprehensive in character. It includes far more advanced work in church history and dogma. It adds dogmatic theology and Christian ethics. It is more critical and scientific.

There is much in this course of study which possesses but little value for moral training. The names of the books of the Bible, many of the facts of Biblical and church history, much of the catechism, the church calendar, dogmatic theology, and church creeds belong to this class. There are also portions of the Bible which are positively immoral in their influence upon young people.

On the other hand, the course is enormously rich in ethical content. It brings before the pupil the moral teachings of the entire Bible—the stern commands of the decalogue, the fervid exhortations and denunciations of the prophets, the sublime moral principles of the Christ. It includes also numerous examples of moral heroism and moral cowardice, and frequent illustrations of rewarded virtue and punished wrong. Again, it brings under tribute the ethical content of church history. While this has its dark moral side, it presents many illustrations of forceful moral character, high ideals, self-sacrificing altruism, heroic devotion to the principles of Christian morality. And it is significant for this course in religion that one of the most striking examples of moral heroism is the German reformer Luther.

Moreover, aside from its ethical content, much of the purely religious training which this course affords is tremendously important for the moral life. Christianity is essentially an ethical religion. The beliefs that God knows the thoughts and motives of the human heart, that it is possible to draw upon the infinite resources of Heaven for help in moral crises, that divine forgiveness of sin may be secured upon repentance, confession and faith, that a Heaven of reward or a hell of punishment awaits the soul at the close of this life, are powerful factors in determining human character and conduct. In fact religious instruction in German schools rests on the assumption that these doctrines are the basis of morality. As far as its content is concerned a course of study could hardly be conceived which would promise more for moral training.

But the value of a course of study is not determined wholly by its content. It depends, also, upon its relation to the life of him who pursues it, and upon the manner in which it is presented.

There are many indications that the course of study outlined above is not closely related to the lives of German pupils. A casual reading of it impresses one that it is calculated to give knowledge about the Christian religion rather than to implant a vital religious faith or to cultivate morality. Many of the clergy complain that religious instruction in the schools is lacking in vitality, fails to reach the lives of the pupils, and, without looking deep enough to find the real cause, blindly urge that more time be given to it. Teachers of the higher schools insist that there is too much pure memory grind, too much catechism and dogma, too much Jewish and church history; that these become a burden to the pupil and defeat the very purpose for which they are given. Professor Kirchner, of Berlin, expresses a feeling quite general among higher school teachers of Germany, when he refers to the religious instruction as a "surfeit of religious doctrines, maxims, hymns, forms, ceremonies." He further criticises the present course of study most severely, when, in looking towards the ideal, he says: "In the choice and treatment of subjects the standard must be genuine religious stimulation rather than dead knowledge, scholastic erudition, or barren forms." (18, p. 479.) A recent writer thinks it would not be far wrong to summarize German opinion thus: "Instruction in religion is absolutely indispensable, but the existing instruction is completely out of harmony with the best thought of the day and stands in need of radical reform." (42, p. 265.)

Perhaps this course was suited to German life when it was first adopted. Certainly it was more in harmony with educational practice in other subjects then than it is to-day, though it has always had too little regard for the educational principle that instruction should be adapted to the needs of the different stages of child development. But Germany, like America, is passing through a period of religious reconstruction. What is to be the final outcome of this reconstruction cannot yet be determined. Already there has come from it a transfer of emphasis from the mystical to the ethical, from dogma to life. The German course of religious instruction, with the inertia so characteristic of education, has hardly begun to respond to this movement. The department of education is still trying to put the new wine of modern interpretations of Christianity into 18th century bottles; if, indeed, they have yet recognized that the wine is new. It is true, however, that this course is more closely related to the lives of the common people than it is to the lives of the professional classes, and so is better suited to the people's schools than to the higher schools. The common people have been less exposed than the professional classes to the influences of scientific progress. They are consequently nearer the religious ideals and life of the time when the course in religion was first prescribed by the state.

Nor can it be said that teachers generally present the religious instruction effectively. A large and growing class treats it intellectually, much as arithmetic or history. Another gradually diminishing class presents it in an extremely devotional manner; every passage of Scripture studied is inspired and has some special significance for the pupil. Many combine in varying proportions the intellectual and devotional treatments. A constantly increasing number of the best trained teachers, especially in the higher schools, are out of sympathy with the rigid orthodoxy of the course of study and disbelieve much that they are required to teach. Professor Paulsen is quoted as having said: "Many of the teachers of religion in these schools are men who have taken a theological course in the university, but finally have been unwilling to take orders in the church because of unsoundness of faith. They are even more dangerous in the schools, where they deal with plastic young life, than they possibly could be in the pulpit." (39.) A German scholar said to me recently: "Religion as taught in the Berlin Gymnasium which I attended had nothing to do with life. Its teaching killed the religious spirit and did not encourage morality." On the other hand many of the teachers in the people's schools are sufficiently in sympathy with the course of study and possess the necessary sense of responsibility for the moral and spiritual welfare of their pupils to make their religious teaching vital. But the vital element is the teacher's personality.

We have now sketched the main features of German school life which contribute to moral training. The following conclusions appear to be justified:

(1) The moral training of the German school has its aim in citizenship rather than in individual development. The problem is to make citizens who will fit existing political and social institutions, rather than to make men, who may later see fit to adjust institutions to their needs.

(2) Respect for authority is, therefore, cultivated at the expense of self-control, moral independence and initiative.

(3) The religious and moral instruction given is in harmony with school organization and management; both make for the same type of character.

(4) This instruction is out of harmony with the progressive thought of the times and on this account has lost much of its former efficiency. Its emphasis is too little on the immutable principles of Christianity and morals; too much on the unessential and the changing.

(5) The instruction is not adapted to the stages of child development. Some effort is made to adjust it to the child's vocabulary but not to its moral progress; the younger children are taught about the sacrifice of Isaac as well as about the youthful exploits of David and the early piety of Samuel.

(6) Where the religious teaching is really vital and stimulating, the force which makes it so is the teacher's personality.

(7) Whatever may be said in criticism of the moral influences of German schools, they stand pre-eminently for the inculcation of two fundamental virtues—obedience and reverence.

MORAL TRAINING IN FRENCH SCHOOLS.

Let us turn first to the indirect influences which count for moral training.

1. The great majority of French school children are taught by teachers of their own sex, and associate in school with pupils of their own sex. To be sure, in the maternal school, attended by children under six years of age, the sexes mingle and are taught exclusively by women. But this is only for a brief period in early childhood. At six the primary school is entered, and separation of the sexes begins. Every commune with a population of over 500 must have a primary school for boys and another for girls. In smaller communes both sexes may attend the same school. In the higher, or so-called secondary schools, the boys and girls are separate from the first. The boys' schools, both primary and secondary, are taught by men; the girls' schools by women, and the mixed schools mostly by women. Enough was said in the previous chapter concerning sex differences to indicate that this arrangement by which each sex associates only with its own members in the school life is significant for moral training.

2. Militarism exercises a strong influence over school life in France as truly as in Germany. Hughes tells us that: "In no country, perhaps, in the world are the schools so influenced, one might say controlled, by the military spirit as in France." Parsons speaks of the atmosphere of war by which the boys' schools are surrounded, referring to the military drill in which

they engage. (24.) Richard calls attention to the military exercises of the last three years of the primary school, these exercises being classed as a part of physical education. (36, p. 7.) Those teachers in the boys' primary schools who received a normal training were taught military exercises and use of the rifle in the normal school. They have also served one year in the army. Those who have not the normal training spent three years in military service. The fathers of primary schoolboys also gave three years to military service. The entire school system is centralized, officered and controlled much like a great army, with the minister of education as commander-in-chief. Official courses of study, sent out from the minister's office, fix the work to be accomplished. French educational writers speak of public education as a "war against ignorance." All this makes school discipline military in character. It makes the teacher a subordinate officer whose chief business is to carry out the orders of superiors. It crushes out originality and initiative in teacher and pupil alike and forbids development of moral self-hood. It subordinates the interest of the individual child to the perfect working of a great machine. It cultivates obedience to authority, but an obedience that is unreasoned and mechanical—an obedience that is unmoral if not positively immoral.

3. An almost entire absence of games and play from French schools has also an important bearing on the development of character in French children. Until recently the French teacher was legally responsible for all accidents to his pupils and on this account naturally discouraged games. "The playground is small, and the teacher's garden monopolizes half of it," says Hughes (14, p. 113), who considers the absence of games one of the most serious defects in the entire school system of France.

4. French teachers are less thoroughly trained professionally than German teachers. Nearly all French primary teachers have had a three year normal school course, but it is less professional in character than that of the German seminaries, and is not preceded by as extensive study. Teachers in the secondary schools receive practically no professional training. The French teacher, particularly in the secondary school, is, therefore, more liable than the German to pedagogical blunders of moral significance.

5. Many patriotic mottoes and moral maxims adorn the walls of French primary schools, exercising an unconscious influence in favor of patriotism and morality. There is also posted in a conspicuous place in each schoolroom a copy of the law prohibiting corporal punishment, the punishments which the teacher may inflict being limited to "bad marks, repri-

mands, partial deprivation of recess, detention after class, temporary suspension, not exceeding three days.'' One may reasonably question whether the influence of the notice does not more than offset that of the mottoes.

6. Competition and rivalry are greatly encouraged by the awarding of many prizes and medals. On the other hand, self-emulation is stimulated by the use of the *cahier*, an exercise book owned by each pupil and taken from grade to grade as he advances. In this book the pupil writes an exercise at regular intervals for the sake of comparison with earlier exercises.

France has made a more serious conscious effort than any other great nation to develop character through her schools. The means chosen is direct moral instruction on a secular basis.

In 1882 a law was passed making compulsory such moral instruction in all public elementary schools. A body of eminent educators formulated a model programme. Courses in morals were established in the normal schools. Text-books, following closely the official programme, were introduced into the schools. Within a few months, moral instruction was as truly a part of the regular school work as reading or arithmetic.

The time devoted to moral instruction in the primary school is, for the elementary and intermediate courses (7 to 11 years), one hour per week, and for the superior course (11 to 13 years), one and one-half hours per week. In general, this time is divided into three equal periods and apportioned to the first hour of alternate schooldays. In the higher primary schools, including not only those offering the general course but also the agricultural, commercial, and industrial, the time devoted to moral instruction is also one hour per week throughout the three year course. In the two year preparatory course of the Lycée and Communal College (ages 7 to 8 years), moral and civic instruction are given with French history and geography, all of which together occupy two and one half hours per week. The Lycée and College require one hour of ethics per week during the third and fourth years.

Since less than 150,000 pupils attend public higher schools of all classes, and about 4,000,000 attend public primary schools, and since conditions in the former both as to organization and instruction appear less favorable to moral training than in the latter, we shall fix our attention chiefly on the latter. It ought to be noted, however, that about one-fourth of the primary school children are in private schools, almost wholly Catholic, and are taught morality in connection with highly sectarian religious teaching. Moreover the percentage of school children in church schools has increased slightly since religious instruction was succeeded by secular moral instruction in the public schools.

It has been said that this moral instruction rests on a secular basis. Duty and conscience are the key words. The sanctions of morality are to be found in duty, not in religion. Duties towards God are included in the official programme but nothing concerning the attributes or nature of God, and of course no church creeds or catechisms, are to be taught. As a matter of fact, duties to God are given but little space in the text-books and are passed over lightly if taught at all. Yet the official regulation says expressly: "Lay moral instruction differs from religious instruction without opposing it. The teacher does not become a substitute either for the priest or for the father of the family; he joins his efforts to theirs in order to make of each child an honest man. He should insist on the duties which unite men, not on the dogmas which divide them. . . . He ought to avoid as evil everything in his language or attitude which would wound the religious beliefs of the children confided to his care, everything which would trouble their souls."

A large majority of primary teachers have received a normal school training, given by professors who have been specially prepared for it in the higher normal schools. It includes two hours per week in psychology, morals, and pedagogy. The teacher at work is provided with elaborate instructions and suggestions concerning the task of moral instruction. He is given a carefully outlined course of study, or "official programme," and his pupils are, in general, provided with text-books prepared according to this official programme. There are in reality three such programmes, one for each division of the primary school.

The elementary programme (ages 7 to 9) is chiefly suggestive. The teacher is to engage in familiar conversations with the pupils and to read to them moral examples, precepts, parables, and fables; also to direct practical exercises tending to put morality into action in the class itself: (1) by individual observation of the pupils' characters, (2) by intelligent application of school discipline, (3) by incessant appeal to the feelings and the moral judgment of the child, (4) by correcting false notions, superstitions, prejudices, etc., (5) by having children present, from their own observation, illustrations of such vices as drunkenness, idleness, and cruelty, (6) by having them contemplate grand scenes of nature in order to arouse the religious feeling and the feeling of admiration for the universal order.

The programme for the intermediate classes (ages 9 to 11),—the heart of the entire course—is more definite. It treats of: (1) The child in the family—duties towards the parents, grandparents, brothers, sisters and servants. (2) The child in the school—docility, assiduity, work, duties towards teacher and fellow pupils. (3) *La Patrie*—duties towards *la patrie* and society. (4) Self—duties towards the body: sobriety, cleanliness, and temperance; duties towards exterior goods: economy, avoidance of debt, work; duties towards the soul: veracity, sincerity, personal dignity, self-respect, modesty. (5) Duties towards other men: justice, charity, kindness, fraternity. (6) Duties towards God: reverence, obedience to God's laws as revealed in conscience and reason.

The superior programme (ages 11 to 13), presents a more comprehensive treatment of duties towards the family, society, and *la patrie*.

This programme of moral instruction as a whole is, perhaps, as comprehensive and rich as can be found anywhere. Moreover, it contains little that is not important for the moral life. It is a careful and complete outline of moral duties.

It should be noted, however, that it is an outline of moral duties rather than a course of study suited to children of public school age. The men who arranged the programme seem to have been thinking of moral citizens, not of moral children at each stage of their development. It is as if, knowing from their own experience and observation what qualities are desirable in adults, they had said: "Go to; let us arrange a programme in moral instruction which emphasizes all these qualities, and, when our children are grown, we shall have noble citizens." Whether the thing to be taught is related to the life of the child is of little consequence; so long as it is likely to be important to the man.

Again, there is lack of harmony between the most fundamental parts of this course of study—those dealing with duties to self—and the organization and management of French primary schools. France affords the anomaly of a programme of moral instruction suited to a republic, and a school organization adapted to an absolute monarchy. The teacher is expected to instruct his pupils in initiative and self-reliance, but the strongly centralized school system forbids him to exercise either of these admirable qualities. And the discipline generally maintained prevents pupils from putting this teaching into practice. Personal dignity and self-respect are to be taught, but neither is possible in any high degree to the teacher, whose duties are so minutely prescribed that the Minister of Education at Paris can tell exactly what is being done at any given instant in every school in France. Both are hostile to the dominant spirit of French life—militarism.

The text-books on morals for the most part, follow the official programme very closely. Their chief differences are in method of presentation, one using many quotations from literature by way of illustration, another emphasizing clear cut definitions, another giving frequent résumés, etc. Some authors grade their books according to the divisions of the primary school. Others combine in one book and with the same treatment lessons for the elementary and intermediate, and still others for the intermediate and higher divisions. One writer has different books for teacher and pupil, the teacher's book including what is contained in the pupil's, and, in addition, two brief plans for handling the lesson (one plan for the intermediate, the other for the superior course), and subjects for written exercises. Since the elementary and higher programmes do not furnish as definite outlines or as rich fields for writers of text-books as the intermediate, there are more text-books for the intermediate course, and many of those for the other courses follow the intermediate outline.

But let us examine some of these books more carefully. One of the most extensively used bears the title: "The First Year of Moral and Civic Instruction." This reached its 48th edition in 1904, 25 editions having appeared since 1890. In 1889 it was mentioned first in the list of text-books most in use—a rank which it appears still to hold. It is intended for children of intermediate grade, *i. e.*, from 9 to 11 years old. The book is divided into thirteen chapters as follows:

(1) Duties of the child in the family, in the school and in apprenticeship.
(2) Duties towards self.
(3) Duties towards society.
(4) Work, order, association, etc.
(5) Employers, and employed.
(6) The farmer.
(7) The merchant.
(8) Service of the state.
(9) The head of the family.
(10) Civil rights.
(11) The state.
(12) The administration.
(13) Rights and duties of citizens.

Each chapter consists of a number of moral, hygienic, or business precepts and definitions, a résumé, a group of references to the supplement, which will be described more fully later, a few subjects for pupils' compositions and several pages of little stories, apparently written by the author, illustrating the teachings of the chapter. There are also questions at the bottom of the page, numbered to correspond with the various duties emphasized on that page. An occasional quotation from the laws of France appears among the precepts. Specimen pages and sections will show the character of the book better than any description of it. Here is the first page, which treats of duties in the family:

(1) "You ought to love your parents, who love you, nurture you, and educate you.

(2) "You ought to respect them. Do not be familiar with them, as you are with your companions.

(3) "You ought to obey them. Do not dispute with them. One disputes with equals, not with his father and mother.

(4) "The law makes sacred the authority of parents in giving them the right to punish. (Here follows a quotation from the laws of the Republic, bearing on the authority of parents over their children.)

(5) "You ought to be grateful to your parents for all the care which they give you."

At the bottom of this page are the following questions:

(1), (2), (3), "State the principal duties of children towards their parents.

(4) "How does the law make sacred the authority of parents over their children?

(5) "Why ought you to be grateful to your parents?"

At the close of the first chapter is the following résumé which the pupil is expected to commit to memory:

(1) "I shall love my father and mother; I shall respect and obey them.

(2) "I shall be grateful to them; I shall render to them in old age the care they have given me.

(3) "I shall love all the members of my family.

(4) "I shall do honor to the name I bear.

(5) "At school, I shall work with all my might; I shall put all my attention and all my intelligence into everything that I do.

(6) "I shall love my teacher; I shall obey him, respect him, and be gratful to him.

(7) "I shall form good habits, and shall choose well my friends. I shall avoid evil companions.

(8) "During my period of apprenticeship, I shall work hard, and be teachable and honest. I shall carefully guard the good habits of my childhood."

Notice that this résumé, as are also some of the others, is cast in the form of a series of resolutions or pledges.

The chapter on "The Merchant" treats of book-keeping, bankruptcy, notes, drafts, checks, protesting of notes, failure, liquidation, and gives the 9 to 11-year-old prospective merchant such indefinite advice as "Do not make hazardous investments," and "Do not buy too much merchandise." In the chapter on "The Head of the Family" we find the question "What is marriage?" answered by the enlightening statement "Marriage is the most serious act of one's life."

Thirty pages of the book are occupied by a supplement which gives additional information concerning terms used in the lessons, usually with quotations from the laws. A few such terms are: "commercial associations," "code," "municipal council," "general council," "contracts of marriage," "desertion," "schools," "expropriation," "electoral list," "pensions," "posts," "military service," "vagabondage." At the end of each chapter are given a few references to this supplement, which the pupil is expected to look up and copy.

What shall be said concerning this text-book as a whole? It contains a large number of valuable moral precepts and definitions, which the pupils are required to commit to memory. There can be no question that it fixes in the child's mind, temporarily at least, many statements of moral duties, distinctions and resolutions. The composition exercises and especially the abundant illustrative material must serve to give this memory stock greater permanence and meaning. But the mere memorizing of precepts, definitions, and resolutions does not constitute moral training. These give at best only knowledge about morality. Unless they actually reach the understanding of the child, they do not even give this. And knowledge about duty and about moral distinctions does not necessarily result in moral life and conduct. The entire book has a mechanical, precept, question-and-answer air about it which robs it of vitality. Many of its teachings are far beyond children 9 to 11 years old; as, *e. g.*, those about the head of the family and marriage. Many others have no moral significance whatever, as some of those in the chapter on the merchant; others never will have interest, except for the few who engage in particular occupations. Much of its illustrative material is fanciful, innaccurate, trivial. No attention is paid to the stages of child development. The author appears to have looked over society and picked out those moral qualities in children and adults which seemed to him desirable, and, without asking whence they came or how they are most naturally developed, to have included them in his book to be taught in the school.

Such is one of the most widely used French text-books on morals—a book which has gone through more editions than any other of the score or so examined. The same author published also a book for the elementary course which follows the intermediate rather than the elementary programme. It has not been so well received, only six editions having appeared in 1902.

Another book of a somewhat different type bears the name "*Le Livre de morale des écoles primaires*" (47) and is intended for intermediate and higher classes. There is a separate book for the teacher. Each lesson contains (1) two brief résumés, one for the intermediate course and one for the superior and

(2) one or more selections from standard authors, chiefly French. The résumés are to be committed to memory. They consist chiefly of moral precepts or definitions concisely but dogmatically and dryly stated. Much of the work is far beyond the primary school pupil. For example, the pupil is asked to express in writing his opinion of a being sensible only to bodily pains and pleasures, and to tell in what moral sensibility consists. He is also asked to tell the difference between desire and will, between anger and will, between physical force and will, and to cite examples supporting his distinctions. The most valuable feature of the book is its illustrative material gathered from the best literature. The arrangement, by which duties of the child are presented in one section and duties of the man in another, is unfortunate, especially since the latter includes most of the fundamental virtues and occupies more than half the book. It tends to emphasize the remoteness of what he is studying from the immediate life of the child.

A set of three books, one for children under 10 and one for boys (53) and another for girls (54) from 10 to 13, bears the title "Moral Maxims." These books are what their names indicate and little more. There is a brief résumé and a list of questions at the end of each lesson, both numbered to correspond with the maxims of the lesson. There are no quotations from literature, no stories, only an occasional crude picture to relieve the monotony of dry moralizing.

A book notably different from any yet described is entitled "*L'enseigment morale a l'écoles primaires*" (62), and is intended for intermediate classes. Its contents are divided into sections according to the months of the year. Thus in October children study duties in the family, in November duties in the school, etc. In each lesson there is a group of moral precepts or definitions, two or three choice sayings of well known writers, selections from good literature to be read, a few questions and a few subjects for compositions. It is one of the best books yet issued, but appears not to have been favorably received.

Other text-books might be mentioned, but these suffice for the purposes of this study. Altogether they are an unsatisfactory lot, of which the best appear to be little used and the worst much used. Probably the most valuable feature of them is the use of illustrative selections from standard literature. But this feature is not used at all in some, and only in a limited and imperfect way in any of them. The one thing common to all is an abundance of moral precepts and definitions.

But how do teachers actually use the programme and textbooks? How are the lessons presented? This, of course, varies greatly with different teachers. M. Pierre, Director of the Normal School at St. Cloud, outlines the method usually followed: "The plan of the lesson is written in advance on the board. The lesson is developed and explained. A résumé is dictated. A selection illustrating the résumé is read. A maxim is given in conclusion." But these are only formal steps, untouched by the personality of the teacher. Is the teaching perfunctory and mechanical, or is it vital and stimulating?

A large number of primary inspectors' reports quoted by Lichtenberger (22), in 1889, indicate that at that time the great majority of the moral teaching was perfunctory and mechanical. Said one inspector: "The teachers lack capacity and conviction." Said another: "The lessons too much resemble ordinary lessons; they lack the emphasis of conviction and sincerity which belongs to true moral instruction." One inspector made the statement that moral instruction did not exist in the schools under his inspection, and then added significantly that he heard a teacher trying to explain to seven or eight year old girls the distinction between soul and body. According to most reports, however, a few teachers under each inspector were able to give the moral instruction in an efficient manner.

M. Pelisson (27), writing of the situation in 1900, quotes much more favorably from several inspectors. One says: "Of all the different subjects taught in the schools *la morale* has, in the past ten years, made more serious progress and given better results than any other." Undoubtedly there has been great improvement since the very unfavorable reports of 1889. But an American professor of education, after a recent careful inspection of French primary schools, characterized their moral instruction as "absolutely wooden."

It is impossible to determine and difficult to estimate the results of such a course of instruction as the one we have been considering. One can say without hesitation, however, that it has not accomplished what its friends expected of it. This expectation is well expressed in the words of the official programme. Speaking of the teacher it says: "He is to strengthen, to root into the minds of his pupils, for all their lives, through daily practice, those essential notions of morality common to all civilized men. He should aim to make all the children serve an effective apprenticeship to a moral life. Later in life they will, perhaps, become separated by dogmatic opinion but they will be in accord in having the aim of life as high as possible; in having the same horror for what is base and vile, the same delicacy in the appreciation of duty, in aspiring to moral perfection, whatever effort it may cost, in feeling united to that fealty to the good, the beautiful, the true, which is also a form, and not the least pure, of the religious sentiment."

Buisson, in 1898, after years of service as director of primary education, writes almost passionately of the limitations of the school in the work of moral training (33, 1901, p. 1121), Cloudesley Brereton, of England, vice-president of the international jury on primary education, Paris Exposition, after having made extended personal observation of primary education in France, speaks of "a considerable gain" having resulted from the change of education from a Catholic to an ethical foundation. He says, also: "During my visit in the provinces I was present at a certain number of *morale* lessons, and was agreeably surprised by the interest the children generally took in them. Whenever the teaching was practical, and bore on the daily life and ways of the school, or treated of some subject well within the ken of the children, it was easy to see that the teacher had the ear of his audience. But if an abstruse *cas du conscience* was posed which required some subtlety to disentangle, or the teacher was too anxious to give a philosophic or dogmatic air to his teaching by entrenching himself behind a barbed wire fence of maxims and formulas, it was evident that even those children who attempted to follow him, painfully repeated by rote what he laid down, but their hearts were far from him." (33.) Bracq quotes several school inspectors and other French writers as speaking of the results favorably. Their statements, however, are all in general terms such as "manifest progress," "results more and more satisfactory," "admirable results," etc. While Bracq himself thinks that these and other similar investigations show tangible results, he admits that: "Honest teachers on both sides have not failed to express their disappointment at the results of their work." (1.)

To be sure the international jury on primary education, of the Paris Exposition, awarded France, by unanimous vote, a grand prize for her system of moral instruction. But it must be acknowleged that the award was made on the appearance of the machine, rather than on its product—because France was making an extensive direct effort for moral training, not because there was evidence of the effort's success.

Some light is shed on the question of results by an investigation recently made. More than 3,000 primary school children were asked to describe the "most beautiful act they had ever seen." (37.) About half recounted not an act which they had actually seen, but one of which they had read in the illustrative material of their moral instruction books. For the most part they reported acts of heroism and self-sacrifice, and the heroes and heroines were those of the books. The test indicates that at least the most striking and dramatic parts of the stories become so identified with the child's own experiences that he does not know the one from the other. The assumption is likely to follow that the child's appreciation of all moral acts has been intensified in like manner by his moral instruction. But it must be remembered that the common every day duties are less dramatic, less impressive than the heroism and self-sacrifice of the stories.

The "Book of Gold of the Schools" is cited by some writers as evidence of the good results of moral instruction. (28.) This is an immense manuscript volume containing brief accounts of acts of justice, honesty, and heroism observed in French school children. The book formed a part of the educational exhibit in 1900. But one is hardly justified in assuming that these acts are the result of the school study of morality.

When all is said, one must acknowledge disappointment that the results of so great an effort are not more obvious. It must also be borne in mind that since 1882, when moral instruction was introduced into the schools, there has been marked educational progress in many directions, such as better preparation of teachers, introduction of manual training, etc., which have no doubt contributed much to moral improvement through the school.

From the foregoing study the following conclusions seem to be justified concerning moral instruction in French public primary schools.

(1) That the official programme comprises an admirably comprehensive list of moral duties.

(2) That this programme fails to take account of the stages of child development.

(3) That it is out of harmony with the organization and management of the schools.

(4) That it is poorly interpreted and applied by the text-books most in use.

(5) That most teachers lack the sympathy and conviction which alone make moral instruction vital.

(6) That the whole effort places too great emphasis on the school as an educational factor.

(7) That it tends to treat morality as a veneer to be put on rather than as a life to be developed. (One text-book defines *la morale* as the science of good manners.)

(8) That the results, so far as they can be estimated, appear pitiably insignificant when compared with the magnitude of machinery and effort which produce them.

But however severely one may criticise the French method of giving moral instruction in the school, he must give France the credit for having made a beginning in the face of tremendous obstacles. What it meant to take the schools by force out of the hands of a church which had controlled their teaching for centuries, in a country where there was comparatively little middle ground between Catholicism on the one hand and atheism on the other, and to substitute in these schools moral instruction based on duty and conscience for the religious instruction of the Catholic church, cannot be appreciated by a foreigner. Morever, one must acknowledge that much light has been shed on the problem of moral instruction. Thousands of French teachers have been forced to think more or less seriously about it. Their thought and their experience are gradually making clear the weaknesses of the methods employed and focusing attention upon the teacher as the fundamental factor in the task before them.

MORAL TRAINING IN ENGLISH SCHOOLS.

Passing from a study of the French to a study of the English school system, one is impressed with the complexity of the problem which confronts him. A striking feature of English education is its lack of uniformity. This makes general statements extremely hazardous, and the task of finding common features of moral significance peculiarly difficult. The difficulty will be lessened somewhat, though still great, by treating of elementary education and secondary education separately. And first let us give attention to elementary education.

It is necessary to distinguish between the two types of English public elementary schools. Prior to the law of 1902, these were known as "board" schools and "voluntary" schools, and since this law was enacted as "provided" and "non-provided" schools. The chief difference between provided and non-provided schools is that the former are entirely free from denominational control while the latter are not. Both are, by the new code, under the control of the county council, but not equally so. Board Schools, or provided schools were established by the government in 1870 and have been supported from the first by special grants, and by local taxes. Since 1903 the county council appoints their local boards of managers. The Voluntary Schools, or the non-provided schools were founded by religious denominations or by the British and Foreign School Society and have been supported partly by denominational funds and partly by Government grants; but since the new code went into effect their support has been the same as that of the provided schools. The law provides for the appointment of four out of six of the board of local managers in accordance with the original deed of foundation of the school, the other two being appointed by the county council. The appointment of teachers is in the hands of the board of managers, thus making it practically certain that religious tests will continue to be imposed on teachers in non-provided schools. In 1902, 48% of English public elementary pupils were in provided and 52% in non-provided schools.

The main difference between the two classes of schools, as far as they concern this study, are: (1) differences in preparation and efficiency of teachers, (2) differences in the religious instruction given. Before 1902 the Board Schools were better supported financially than the Voluntary Schools and on this account were able to secure a larger percentage of teachers who had received a professional training. Though their attendance was at this time a little less than that of the voluntary schools, they employed over 30% more certificated teachers, or teachers of the highest class. The religious instruction of the non-provided schools is denominational in character, that of the provided schools undenominational.

With these differences in mind it will be possible for us to speak of the English public elementary schools as a whole in relation to moral training.

Turning first to those features of the elementary school which influence moral life indirectly, one finds that while the majority of German elementary school teachers have had a very thorough three year course of professional training, and while nearly all French primary teachers have pursued a three year professional course not greatly inferior to the German, only about 25% of English elementary school teachers have had a two year training course, which is really more largely secondary than professional. Moreover, 12% of the English elementary teachers—the so-called additional teachers—were admitted to the profession without examination even as to scholarship, and about 20% belong to the class of pupil teachers—"young apprentices of from fifteen to eighteen years of age, engaged by the managers on condition of teaching under the superintendence of the head teacher and of receiving suitable instruction during their engagement." (14, p. 52.)

Separation of the sexes in elementary schools is common in England but much less so than in Germany or France, there being about twice as many mixed deparments, aside from those for infants, as there are separate departments for the sexes. Besides, less attention is paid to placing boys' departments in charge of men than on the continent. Feminine influence is becoming predominant in English public elementary education, and is necessarily bringing with it greater emphasis on feminine than on masculine moral qualities.

Games, play, and athletic contests occupy a much more prominent place in the life of English school children than in that of the German or French child. According to Philpott, the spirit of the Eton playing fields is invading the elementary school playgrounds of London. (59, p. 314.) Teachers generally are in sympathy and frequently take part with the pupils in their games. Says Greenough, "In the elementary schools, the teachers feel that the vigorous use of the play hours is of primal importance in developing manhood." (10, p. 265.)

The influence of militarism and of extreme centralization in educational management are absent from the English school. The head-teacher enjoys a great deal of freedom and initiative in the organization of his school and the arrangement of his programme. The government code requires that certain subjects be taught, but does not specify how extensively or in what manner. Moreover, it provides another list of optional subjects, from which the head-teacher may select what shall be taught in his school. Provision is thus made for the needs of the local community, and respect is shown to the teacher's individuality and sense of responsibility. The teacher is more a partner and less a servant of the government in its educational work than is either the French or German teacher. A school atmosphere is thus created which stimulates a feeling of responsibility and initiative in the children. Punishments are sometimes severe, but order and obedience are not of a military, mechanical character. To quote Greenough again: "Germans who visit English schools have often said that they would like to transfer to German schools the force and the enthusiasm of the English student in out-of-door sports, his self-reliance, and the relations of the teachers and pupils." (10, p. 173.) The report of the Moseley Educational Commission, however, indicates that the relations between teacher and pupils are much less intimate and friendly in England than in America, one commissioner referring to the British tendency of teacher and pupil "to regard each other as natural enemies."

Judging by reports of official inspectors, but little importance is attached to reading lessons as forces for moral training. (30.) One inspector points out that reading books are lacking in both literary and ethical merit, and another complains that historical, geographical, and scientific supplementary readers are crowding out those of real literary value. Still others refer to efforts being made by teachers to get pupils into the habit of reading public library books and to direct this reading along right lines. But most of the reports deal only with such topics as enunciation, fluency, understanding of subject matter, oral reading, silent reading, etc., with little appreciation of the moral possiblities of the reading lessons.

The same reports show that pupils are required to memorize many literary selections, mostly poetical, and give them as recitations. Several inspectors complain that these recitations are chosen with too little regard for their literary value. Nothing is said concerning their moral value, but no doubt many of them exercise considerable influence on the lives of those who memorize them.

The act of 1870, establishing a system of elementary education in England, made important provisions concerning religious instruction. For the Voluntary Schools it provided: (1) that no religious test should be required of any pupil, (2) that religious instruction should be given at such an hour that parents who chose to do so might withdraw their children without forfeiting any of the other benefits of the school, and (3) that this instruction should not be subject to inspection by her Majesty's inspectors. For the Board Schools it provided that the question of religious instruction should rest with the local board, with the reservations that it should not be denominational and that it might be possible for parents to withdraw their children from it as in the case of the voluntary schools.

In accordance with this act, almost all school boards introduced scripture lessons into the schools under their management. The London board provided that "the Bible shall be read, and there shall be given such explanations and such instruction therefrom in the principles of morality and religion as are suited to the capacities of the children." The same board also issued annually a syllabus of Bible instruction, which was adopted by 101 other boards, including those of several large cities. In 1895 there were only 9 school boards in England and 48 in Wales, out of a total of 2,390, which made no provision for religious teaching. More recent legislation, though prompted by religious controversies, has had no effect on the practical working of the arrangements made under the act of 1870. Speaking for London, Webb says: "From this standpoint of administration, it is a merit of the acts of 1902-3 that, so far as religious teaching is concerned, they simply maintain the existing arrangements. They make no change whatever, and they require no change, in the religious instruction given in any London school." (44, p. 200.)

As has already been indicated, the subject-matter of religious teaching in the board schools differs little from that of the voluntary schools, except that the latter includes the catechism and other denominational features. It will suffice, therefore, to consider here the character of this teaching in the board schools with only mention of differences of method in the two classes of schools, where these differences seem important. And since London includes by far the largest number of schools under one local management, and since, also, many other cities have adopted the London syllabus of Scripture lessons, it will suffice to present this teaching only as given in the London schools. It must be borne in mind, however, that differences between board school conditions and voluntary school conditions are greater in London than in England as a whole.

It is almost a universal custom to open the school with a hymn and prayer, either the Lord's Prayer or one or more short prayers from the book of common prayer. The Scripture lessons are given immediately after the opening of the morning session, and occupy about a half hour. "Teachers are instructed to make the lessons as practical as possible, and not to give attention to unnecessary details." Examinations are held at regular intervals and reviews are frequent. Numerous prizes, provided by private individuals, are distributed annually among those pupils making the best showing in the examinations.

All lessons are based on the syllabus furnished by the local educational authority. How they shall be taught is left to the individual teacher. The syllabus provides a different programme for each of the seven standards or classes, but each standard reviews much that has been learned in the earlier standards. (See 10, pp. 53-56.) The Lord's Prayer, the Ten Commandments, Proverbs, many of the Psalms, and selections from the Gospels and the Prophets are committed to memory. The child is made familiar with the lives of Old Testament heroes, "with the practical lessons therefrom, together with the teaching of the law of Moses with reference to the poor, stranger, fatherless, widow, parents and children." The life and teachings of Christ are studied with care, special attention being given to the parables of the Sower, the Lost Sheep, the Laborers in the Vineyard, The Talents, the Good Samaritan, The Lost Piece of Money, The Prodigal Son, The Pharisee and the Publican. The learning of texts illustrating the duties of truthfulness and temperance is emphasized.

It is obvious that the syllabus was arranged with special emphasis on the moral teachings of the Bible. Nearly all of the most objectionable part of the religious instruction of the German schools is omitted. It is also arranged with considerable regard for the age of the child, the simpler stories and easier selections coming first, though too little attention is given to selecting stories suited to the child's stage of moral development.

In regard to the manner in which the Scripture lessons are taught it may be said, (1) That a reverent spirit is almost always manifest in both teacher and pupils. American observers have repeatedly called attention to this. Board inspectors have reported that they find the spirit of reverence as marked in the board as in the voluntary schools. (2) That Scripture lessons are, on the whole, taught with as great care and thoroughness as any other lessons. The opposition of the Anglican Church to the board schools on the ground that their religious teaching would be colorless and comparatively valueless without denominational sanctions, has incited the managers of the board schools to put forth extra efforts to make the religious teaching at least as good as any other. Sir John Gorst maintained in the House of Commons in 1898 that, as far as the historical facts of the Bible are concerned, they were taught far better in the board schools of London than in the voluntary schools of the same city. He attributed this to the better training of the board teachers, and to the fact that in the board schools the Scripture lessons are taught in the regular classes, while in voluntary schools they are taught to the school as a whole, in open session.

Rev. Bernard Reynolds, Prebendary of St. Paul's and Diocesan Inspector of schools, London, after severely criticising the principle of board school religious teaching admits that, "In board schools the religious teaching is far better than is usually believed. The syllabus of the London school board is quite excellent, both for pupil teachers and children, and in many of the schools the teaching is quite as good as in any church schools. . . . Under some boards the religious teaching is worth nothing; the same may be said of some of the voluntary schools." (34, p. 53.)

The effectiveness of religious and moral instruction is always difficult if not impossible of measurement. Nevertheless, a few words may profitably be said concerning the results of this instruction in English elementary schools. An official report of inspection of religious teaching in the board schools in 1893 stated that: "the Fatherhood of God and the brotherhood of man are the key notes of it. So far as the examination can test it, the upshot of the lessons may be said to be the acquisition of a very fair knowledge of the Bible story and the committal to memory, and perhaps to heart, of a considerable amount of the Bible text." The eminent English educator, Sir Joshua Fitch, believes that: "a successful effort is made in the board schools to bring up the children in the fear of God, with a reverence for his Word, a considerable knowledge of the history and poetry of the Bible and its plainer moral lessons, and especially of the life and teaching of our Lord." He adds: "No one who knows the schools can well doubt that . . . religious and moral teaching of a very precious kind is imparted in the schools, and that the influence of this instruction on the conduct and character of the children, and on the religious life of the nation, has been profoundly felt." (10, p. 61.) The last president of the London School Board, in an address delivered when, by the Act of 1902, this board ceased to exist, said: "The excellent results of this teaching, due to the discrimination of the teachers, have been admitted by all impartial critics. Hundreds of thousands of children have reaped the benefit of the illuminating pages of Holy Writ and in after life will have realized, amidst the vicissitudes of their existence, how much they owe to the teachers who, through this teaching, created an atmosphere which permeated the day's work." (31, p. xix.) Dr. Greenough, from an American point of view, maintains that "The literary, moral and religious value of these lessons can hardly be overestimated." The fact that whether or not religion shall be taught is decided by the local board, the freedom of the individual teacher and the absence of church dogma all tend to make the religious teaching of English board schools more vital than that of the German people's schools.

Turning to secondary education we find that not until the passage of the Educational Act of 1902 was provision made for a secondary school system connecting with the elementary system. But generations ago the great "public school," of which Eton, Rugby, Harrow and Winchester are the most notable examples, became the typical secondary school, after which scores of lesser institutions have been modeled. The public schools are boarding institutions, each independent of the other. They admit boys at from 11 to 14 years of age and offer six year courses. The school is divided into "houses" of 40 or 50 boys each with a master over each house. The expenses are so great as to make them distinctively class institutions. Their courses of study are extremely classical, some schools devoting two-thirds of their time to Greek and Latin.

Perhaps no one feature of English public school life contributes more to moral training than school games. No other schools in the world have so fully recognized their culture value. Out-door sports are graded and made a regular part of the curriculum. Boys are excused from them only upon medical advice. Any absence from the playing field is treated as an absence from the classroom. Masters not only direct the games, but often join in them. On the average, nearly two hours each afternoon are devoted to sports.

Mr. Paton, Head Master of Manchester Grammar School, after discussing the physical advantages of these public school games, speaks of their moral value as follows: "But there are other effects, less obvious and less conscious, but more important and quite as real. Indirectly, but none the less effectively, games develop promptness of action and promptness of decision, prompt command on the part of the captain, prompt obedience on the part of the team. They teach self-restraint, how to keep one's temper under trying circumstances, and respect for an adversary even in the hottest conflict. They teach straightforwardness and a sense of honor, rudimentary but real. They teach unselfishness, and what English people specially lack—the habit of co-operating with each other. And they teach all this in the line of the boy's own natural taste and natural activities. His native combativeness, which, if neglected, would make him a hooligan, and if repressed makes him a coward, is thus utilized to make him a man." (25, p. 10.)

The curriculum of most English secondary schools is extremely classical, cultivating conservatism, respect for authority, imitation of the ancient—in a word the spirit of scholasticism. The "public school" devotes twice as much time to Greek and Latin as does the German Gymnasium or the French Lycée. Science, which stands for individual observation, independence, self reliance, self expression, has hardly begun to find a place. The classical influence is, however, largely offset by that of the "playing field."

On the other hand, many public schoolmasters and others complain of the evils of too great athleticism, growing largely out of contests between schools. An anonymous writer, Kappa, while finding no fault whatever with the time spent in games, deplores the fact that "by far the greater part of boys' leisure moments is taken up with reading athletic reports, discussing records, and brooding over athletic distinctions." (16, p. 173.) The author of the Upton Letters, himself a public schoolmaster, speaks of the boys basing their ideas of social success entirely on athletics. Another writer insists that "the interest in these games is often too absorbing, lasting in a full measure throughout the whole day, and distorting the ideals of life; often making boys admire skill in them more than they admire usefulness and virtue." The same writer refers to the "ruinous publicity" given these games by the newspapers. Mr. Moseley, patron of the educational commission which bore his name, calls attention to the fact that sports do not form anything like so important a part of the everyday life of the schoolboy in America as in England. He adds: "The absolute devotion to sports to the exclusion of almost all other interests, which of late years has crept into all classes of English schools, forms I think, one of the weakest points in our educational system." (32, p. 13.)

Another feature of the public school which is important for moral training is the intimate relations of the master with his boys. We have seen that he is with them in their games. He is also with them on long tramps. He lives in the same house with them, and dines at the same table, daily sharing their experiences. Says Sadler: "The English secondary schoolmaster, teaching in a school of the corresponding grade, is much more the personal friend of his pupils, much more in sympathy with their out of school interests . . . . than the German." Paton also speaks of the closeness and the freedom of personal intercourse between master and pupils as one of the distinguishing characteristics of an English public school. This greatly intensifies the influence of the master's personality. But it does more. It contributes greatly to the cultivation of that school loyalty which is so marked a feature of every public school. Besides, the whole situation contributes to the same end. The school is more than school to its boys; it is home, also, for most of the year; and it calls forth much of the home-feeling, and the home-loyalty, along with the loyalty ordinarily developed by the school. No other schools in the world succeed so well in rousing the life-long devotion of their students as the great public schools of England.

Discipline, in the more important matters of conduct, is strict though much less so than in the French Lycée. Mr. Gray, a member of the Moseley Commission, and himself a head-master, "speaks of the uncompromising, unquestioning discipline which marks the well governed English public school." On the other hand, reliance is generally placed "on inward trustworthiness and a sound, enlightened, wisely directed public opinion" rather than on close supervision. And public opinion is almost always the opinion of the leading spirits in the sixth, or highest, "form." Recognizing this, Dr. Arnold instituted his system of sixth-form government, which is now in quite general use. Paton describes it as follows: "The boys of the highest form are invested with certain powers of supervision and government, in return for which they receive certain special privileges. . . . . They are responsible for orderly conduct at meals, in the corridors, the studies, and dormitories. . . . . They are responsible under the masters for punctuality and good form at games. They are expected themselves to show the highest example in industry, good conduct and public spirit." (25, p. 26.) There can be no question that this responsibility for the conduct of others is of great value to sixth-form boys, and, under a wise head-master, who keeps constantly in touch with his older boys, to the school as a whole. But experience has shown that the system has serious faults.

A complete lack of professional training on the part of English public school teachers has an important bearing on their efficiency in moral training as well as in intellectual training. The notion that a man needs only to know his subject or subjects in order to become a secondary teacher still holds sway in England as it does in America.

Cramming for university, professional, Joint Board and other examinations is a distinctive feature of the secondary school. Each school is judged by the success of its candidates in competitive examinations. Therefore every boy who shows special ability is crammed to the limit of his capacity, at the expense of his fellow students and of his own highest interests. A member of the Moseley Commission speaks of the cramming system as one of the most serious difficulties which English secondary schools have to face.

Another feature of the public school which has significance for moral training is its distinctively class character. It is a school for the sons of wealth only. The boys have almost no contact with the lower classes of society during their school life. Says Paton, who is a strong supporter of the public school: "Too often the boy learns to despise the great body of his species with a contempt bred not by familiarity but the lack of it." (25, p. 40.) Keen competition between the different classes of society rather than co-operation lies at the basis of English life, and the public school fosters, rather than discourages, this unhealthy condition.

Again, it must not be overlooked that English public schoolboys not only are taught exclusively by men, and associate only with pupils of their own sex during school hours, but that they have no other associations at any other time during the day. They are almost entirely removed from the influences of the opposite sex. Only during vacations are they permitted to breathe the home atmosphere, sweetened and refined by a mother's, and perhaps a sister's presence. We have already seen in our study of French and German schools that the association of boys during school hours exclusively with men and boys tends to intensify their masculine qualities; how much more does this. Personal courage, sense of honor, hardiness, self-assertiveness are stimulated in a high degree, while sympathy, kindness, self-sacrifice, thoughtfulness for others—the higher altruistic virtues—are repressed, or at least not encouraged. It would be interesting to speculate on the outcome of this double system of education which puts the sons of wealth entirely under male instruction, and the sons of the common people almost wholly under the tutelage of women.

Religion occupies an important though unobtrusive place in public school life. Paton says: "the public school spirit is based on religion, though there is not much demonstrative religion among the boys." (25, p. 37.) Scripture is taught about two and one half hours per week in each form, much as it is taught in the voluntary schools. The chapel is the most expensive and beautiful part of the school premises. A brief chapel exercise is held in the morning. Prayers are read in each house in the evening just before retiring. "Even when there was the great rebellion at Rugby, and the head-master was barred out of his own house, the sixth-form fellows held their regular prayers evening by evening!" At the Sunday services the head-master gives much advice and endeavors to inculcate the ideals for which the school stands.

Such are some of the features of English schools which are most significant for moral training. One is impressed especially by the facts that these schools recognize and use a considerable number of forces for character-building, that they place much emphasis on the personality of the teacher, that, on the whole, they stand for the cultivation of individuality, self-expression, initiative and self-reliance, though there are strong influences in the opposite direction, that they afford a solution, under peculiar conditions, of the vexing problem of religious instruction.

On the other hand it must be acknowledged that the English teacher has but meagre professional preparation for his work; that the separation of the social classes in school life interferes with the cultivation of the broadest altruism; that probably neither the exclusively masculine environment of the boarding schools nor the largely feminine environment of the elementary schools affords ideal conditions for the moral development of the English boy; that even so valuable a moral discipline as that of games is often vitiated by misplaced emphasis.

MORAL TRAINING IN AMERICAN SCHOOLS.

Lack of uniformity is the first thing which impresses one who attempts to consider the contribution of American schools to moral training. American public education is fundamentally a local matter.

Several states, among them Massachusetts, Rhode Island, North Carolina, West Virginia, Minnesota, North Dakota and Washington, have made legal provisions concerning moral training in their schools. These provisions vary from that of North Carolina which aims merely at requiring teachers to "encourage morality" to that of West Virginia which charges "all teachers, boards of education and all other school officers with the duty of providing that moral training for the youth of this state which will contribute to securing good behavior and manners, and furnish the state with exemplary citizens." Minnesota provides that all school officers may introduce . . . . instruction in the elements of social and moral science." North Dakota prescribes specifically that "moral instruction shall be given by each teacher in the public schools," but fails to provide for the enforcement of the prescription. It is hardly necessary to say that these laws are commentaries on the art of law making rather than actual forces for moral training in the schools.

Several of the states have also passed laws or rendered judicial decisions concerning Bible reading in the school: nine states prescribing it, twelve giving it a legal status, and five forbidding it. Because of their relation to religious beliefs these regulations, particularly those forbidding Bible reading, have aroused more discussion and are more generally enforced than those concerning moral training.

All of the states affect, in a slight degree, the efficiency of their schools for moral training (except the schools of those cities which examine their own teachers), through the standard of attainment required of teachers in order to secure the teaching certificate. The state provisions for the removal of immoral teachers by local authority, and for the prevention of saloons and immoral houses locating near school buildings, also have some bearing on the moral efficiency of the school.

Aside from these very general limitations each city, town or rural school district is a law unto itself as far as the moral influences of its schools are concerned.

In a few cities, the school board and superintendent provide as at Anderson, Indiana (3), for an extended, systematic course in moral instruction. In other cities the board, in its printed regulations, calls the attention of the teacher to the importance of making each part of school life count for moral training and provides him with a syllabus on ethics suggesting how this may be done. New York city is an illustration, providing a syllabus which emphasizes the personality of the teacher, reverence, the spirit of the classroom, the development of self-control, the moral value of school subjects, etc. The syllabus also includes a list of topics for practical lessons in morality and lays down the following principles for the guidance of the teacher in moral education: "(1) The course of moral training is a development, in which the child is first led to practice and afterward to work from principle. . . . The child also develops from egoism to altruism. . . . (2) The culture of the imagination is a powerful aid in moral instruction. . . . (3) In using literature and similar material for puposes of moral education, the teacher should not violate the law of self-activity. . . . (4) The most effective method in moral education is positive rather than negative. A mind filled with good interests, high ideals, and helpful activities, has no room for evil. Love is a stronger and better motive than fear." (13.)

Other city boards leave their teachers without printed regulations or suggestions of any kind, the superintendent bringing the question before them from time to time in teachers' meetings or by circular letter. In still other city schools and in nearly all village and rural schools the matter is entirely in the hands of the individual teacher, and whatever is done for moral training must be done on his initiative.

Consequently, the direct moral instruction actually given in the schools varies greatly. Nearly all teachers devote the first few minutes of the day to "opening exercises." Most of them —about 75%—use Bible readings, or the Lord's Prayer, or both, along with religious or patriotic songs, for these exercises. Some give short ethical talks or read stories containing moral lessons. Many have their pupils learn proverbs, mottoes, precepts, or short selections from literature which have a moral import. Some take advantage of every opportunity which the regular lessons afford to point a moral. Others give a few earnest words of moral instruction whenever an incident of school life offers a favorable opportunity. Most teachers use several of these means for giving direct instruction in morals. Few if any schools are entirely without such instruction, although a formal course of study is rarely followed. In a word, direct moral instruction is nearly always incidental and unsystematic.

But American educators rely chiefly on *indirect* means for moral training. Let us examine some features of the public school which are indirectly significant as regards moral training.

Prominent among these is lack of professionally trained teachers. Hughes calls this the weakest point in the American school system. Even in Massachusetts, which heads the list, less than half the public school teachers have had a normal school course. Taking the United States as a whole, not one city teacher in four has received such training, while in many states, where the population is chiefly rural, less than half have received any education whatever beyond the grammar grades. Very few high school teachers, even in the larger cities, have had any professional training. Besides this, many teachers who graduated from so-called normal courses attended institutions whose chief aim was to prepare for teachers' examinations rather than for teaching. Teachers' associations and institutes, summer schools, reading circles, etc., have done much to supplement the work of normal schools, but are by no means a substitute for it. Moreover, the brief professional life of the American teacher, said to be five years, indeed for the rural teacher only two years, shows that schools are largely in the hands of those who lack the training of experience as well as that of the normal school. The relation of professional training of teachers to moral education has been discussed at some length in the earlier sections of this study. It need not be considered again here. However, it must be borne in mind, as will appear more clearly later, that much depends on the educational aim emphasized in this training. If the aim be merely to give the prospective teacher methods of school work and knowledge of the subjects to be taught, the result must be much less important as far as the moral efficiency of the teacher is concerned than if it be chiefly to put him into sympathetic touch with child life by giving him the genetic point of view.

A second feature of the American school having an important bearing on moral training is the predominance of female teachers. Statistics of the bureau of education show that nearly three-fourths of the public school teachers are women. In many states the percentage is much larger, Massachusetts having ten female teachers to one male. The Moseley Educational Commission expressed alarm at "the growing preponderance of women teachers," one member lamenting that "the boy in America is not being brought up to punch another boy's head or to stand having his own punched in a healthy and proper manner." (32, p. 13.) German critics maintain that our schools are training a race of effeminate men, lacking in virile, aggressive qualities. Prominent American educators take the same view, and plead for more male principals and teachers in the higher grades, especially in the high school. But the significance of the sex of teachers for moral training has been considered in the section devoted to German schools. Suffice it to say here that we Americans, on account of a commercialism which is driving men out of the teaching profession, are throwing the influence of our schools toward the cultivation of a feminine type of morality.

The organization and management of the American school have an important bearing on moral education. In the main, the organization is such as to give the individual teacher a good degree of independence and to encourage initiative and a feeling of responsibility. In some city systems, however, nearly everything is prescribed and outlined by the board or superintendent, making the teacher's work lifeless and mechanical. In most rural schools the teacher is his own master. Wherever the teacher has a fair degree of freedom his management generally, though by no means always, provides an atmosphere favorable to free and natural development of the moral nature. The relations between teacher and pupil are more intimate and friendly than in the schools of any other great nation. The children have greater freedom in asking questions and in expressing their opinions. Discipline, too, is more incidental and is based on interest in the work of the hour. The teacher seeks not so much to keep order as to keep the pupils interested in the work they are doing. Some principals and teachers establish a system of co-operative management and discipline, sharing with the pupils the responsibility for the general good order of the school. A few principals have gone so far as to organize their schools into municipalities, called "school cities," with mayor, council, police, board of health, judge and other officers elected by the pupils. Practically all members of the Moseley Educational Commission report that they were greatly impressed by the cordial relations existing between American teachers and pupils and by the dependence of discipline on interest. (32, p. xxiii.) Both of these give free play to the personality of the teacher, on which is placed, according to H. Thistleton Mark, the chief reliance for moral training in American schools. This eminent English educator reached the above conclusion after extensive study. He quotes with approval: "When a boy is going into a classroom he thinks more of the man he is going to meet than of the subject of the lesson," and confesses that in search of something concerning moral training that could be written down in a report, he felt a momentary impatience at times when greeted with the formula "the personality of the teacher." (23, p. 90.) It must be confessed that both Mark and the Moseley commission visited only our better schools but they unquestionably hit upon characteristic though by no means universal features.

American methods of teaching place much responsibility on the pupil, leave a great deal for him to work out for himself, thus serving to develop self-reliance and initiative. Says Mark: "Comparing elementary school teachers in England and in America, English teachers, as a rule, take a far greater proportion of the work into their own hands; leave much less, that is, to the spontaneous efforts of the children." (23, p. 64.) This is true even in a greater degree of the elementary teachers of Germany and France. It must be admitted that the American method often has the disadvantage of merely substituting one authority for another—that of books for that of the teacher—thus lessening the personal influence of the teacher. But even in cases where books come to be looked upon as almost sacred authorities the pupil learns to rely on his own efforts to find out what these authorities say.

The regular studies of the curriculum, especially reading, history, literature, manual training and nature study, are generally recognized as having an important bearing on moral training. In the main, however, the subjects taught in the American school are not different from those taught in Germany, France, and England, though a German writer, Gizicki, has pointed out that American school readers are richer than those of Germany in moral incidents from current life. The hero of the American reader is more apt to belong to the present generation and to have risen from the ranks of the common people, while the hero of the German reader is more often of royal blood and of a generation or more ago. It needs to be noted, however, that the curriculum of the American school affords far richer material for character building in the elementary grades than in the higher grammar grades. In the former the work is nearly all new to the child; in the latter, he must work over more thoroughly much that he has already learned. In the former, moreover, nature study and manual training have been given a more prominent place largely because something was needed to bridge over the gap that had formeed betwen the kindergarten and the primary school. And the new education has devoted itself chiefly to the child under ten, and to the adolescent. The upper grades have come to be known as the "barren years" of the school curriculum. The amount of work which each child is expected to do is blocked off much as labor unions would mark off a standard day's work and require all to conform to it. The amount of moral injury which results from constantly demanding less of children than they are capable of doing, and from keeping them on work that has grown stale to them cannot be estimated. The enrichment of the curriculum in the upper grades has fortunately begun, but little more than a beginning has yet been made on this very important problem.

The value of games and play as factors in moral education is much less generally recognized in America than in England. In the cities, school playgrounds are usually small, if there are any; the intermissions between classes are brief and pupils are expected to go directly home at the close of the school sessions. The opportunities for spontaneous exercise are thus very limited, and little is done by the teachers to encourage it. A few cities, however, among them Washington, Brooklyn and Cleveland, have begun to teach playground games in the schools because of their effect on the out-of-school lives of the pupils. In the high schools much more attention is generally given to games, nearly every high school having its regular athletic teams and inter-scholastic contests. But even here principals and teachers little appreciate the opportunities afforded by these games for character building, and, with their pupils, are usually more interested in the success of the school team than in the moral effects of the game. The results are often demoralizing because the rewards of success are exalted rather than a clean, honest, straightforward game. And unlike the games of the English public schools, these are participated in by only a small part of the boys of the school, the rest, or as many of them as can pay the price of admission, with also a part of the girls, merely looking on when contests with other schools occur. In a word, outdoor games in American high schools are occasional and incidental factors in the moral lives of a few pupils, whereas they might be daily and wisely directed factors in the lives of nearly all. The instinct of activity gives them an open sesame to the life of every healthy boy.

In the village and country schools games occupy a far more prominent place in the pupil's life than in city schools. Playgrounds are large. School affords almost the only opportunity which the children have for group games. Most pupils spend the greater part of the noon period as well as the forenoon and afternoon intermissions in spontaneous outdoor play. Teachers do much to encourage games by participating in them, though with little or no appreciation of the moral value which we have seen them to possess.

The fact that American schools are not class institutions, as are those of Europe, but institutions in which the children of rich and poor alike mingle, has long been recognized as significant for the development of social and democratic virtues. Social distinctions are eradicated in the public school. Children of the rich learn to appreciate and to understand the children of the poor and *vice versa*. The school is a centre for the dissemination of the broadest altruism.

There are also many features of American schools, less common than the above, which have a place in character building. Among these may be mentioned schoolroom decorations, pupil organizations in the higher grades and the high school, physical training, efforts to influence the out-of-school reading of pupils, and school gardens. It must be remembered, however, that none of these is exclusively American, though some are more highly developed here than elsewhere.

If one were asked to characterize the moral training of American schools in a single word, that word would be *incidental*. It must not be assumed, however, that incidental moral training is of little value. It is suggestive rather than didactic in character and on this account is more effective than formal and direct training. Moreover, it gives freer reign to the personality of the teacher. But in practice many of the forces which ought to make for character are overlooked and unused.

We have now reviewed briefly the principal forces which make for character in the school systems of four great nations.

We have found in Germany the best trained body of teachers in the world, nearly all men, giving dogmatic religious instruction of the type common three centuries ago, and managing their schools with almost military exactness and rigor. We have found in France, teachers second in training only to those of Germany, about equally divided as to sex, giving moral lessons prescribed and carefully outlined by the state, and conducting their schools largely in accordance with the directions of the minister of education at Paris. We have found in England teachers on the whole poorly trained, three-fourths of them women, giving, in half the elementary schools, sectarian and in half, non-sectarian religious instruction, enjoying a considerable degree of freedom in the management of their schools, and depending to a considerable extent upon indirect means for moral training. We have found in America teachers trained and divided, as to sex, much the same as in England, giving moral instruction only incidentally, and relying chiefly on the indirect means of school life for moral training.

Here is diversity indeed. In all this diversity, however, a few things have stood out clearly, compelling attention.

The personality of the teacher has forced itself persistently to the front throughout this study as the ultimate source of power in the school. This force alone gives vitality to the sectarian religious teaching of the German school, and the non-religious moral instruction of the French school. The same force puts life into the English non-sectarian Scripture lessons, and into the incidental, moral and religious teachings of the American school.

The personality of the teacher is also the vital factor in most of the indirect moral influences of the school. Much emphasis is often placed on the moral value of school subjects, especially history, literature, nature study, manual training and the like; and there can be no question that these are rich in moral culture material. But their significance for character depends chiefly on the teacher. We hear it said sometimes that the public opinion of the pupils has far more influence on character than anything the teacher may say. The statement contains a profound truth. Public opinion, in the school or out of it, has immense weight in determining the ideals and conduct of the individual. But public opinion in the school is, or ought to be, in great measure, the teacher's opinion—the expression of his personality—crystallized in the minds of the pupils. We hear much of the importance of the moral atmosphere of the school, and this is tremendously important. The child should literally breathe a moral atmosphere at home and at school if he is to attain the best moral character. It may be added that he must not be more conscious of this atmosphere than he is of the natural atmosphere which carries life-giving oxygen to every fibre of his body. But the moral atmosphere of the school is essentially its routine and discipline permeated by the teacher's personality.

If you ask why the personality of the teacher is the vital factor in the moral training of the school, we can do no better than answer in the words of Professor Coe, and in the spirit of Pestalozzi: "The essential method of education is the sharing of life." (4, p. 146.)

The practical bearing of this is seen in the training, selection and retention of teachers. Concerning their training more will be said later. As to the selection and retention of teachers, it must be confessed that if only ideal teachers were employed most of our schools would be teacherless. On the other hand, it is one of the saddest facts of educational management that the moral personality of a candidate for an educational position frequently counts for less than the amount of "influence" which he is able to bring to bear on the board. Moreover, it is often the case that teachers, principals or superintendents are retained, long after it is known that their moral influence over their pupils is bad. A prominent American educational writer has well said: "School boards that fail to enquire minutely into the past conduct, character and moral reputation of a candidate for an educational position—superintendent, principal or teacher—are guilty of criminal neglect." (19, p. 356.) He might have added that they are far more guilty when they retain a teacher whose moral influence has become persistently bad.

Our study also serves to show that the genetic point of view is fundamental in efficient moral training. Attention must be given to the different stages of child development. The religious instruction of the German schools, and the moral instruction of the French schools were planned with adult life in view, not to meet the needs and conditions of child life. True, in the German Bible stories, in many of the French text-book lessons on morals, in much of the English and American incidental teaching of morals and religion, simple language is used in order that the ideas conveyed may be grasped by the child mind; but it is not considered whether these ideas are suited to the child's stage of moral development. The rigorous discipline of the military type, less common in America than in any of the other countries but still far from extinct here, is based on the theological conception of total depravity instead of on a scientific study of the child's moral nature.

The genetic point of view is significant for moral training, in the first place, because it seeks to relate all of the regular work of the school to the life of the child. It seeks to determine the spontaneous interests at each stage of child development and to correlate school work with these interests. The recent overhauling of school curricula, with extensive revision and enrichment, is a step in this direction.

But the genetic point of view is significant for moral training in more direct ways. It brings out with greater clearness the importance of suggestion and imitation in child training, revealing their variations with advancing age. It shows that every pupil is learning by suggestion constantly whether the teacher would have it so or not. It intensifies and gives a scientific basis to the emphasis placed on individual differences in children—differences in physical health which often mean much for the intellectual and moral life, initial differences in temperament, emotional range, mental and moral initiative, sympathy, tact, etc., differences in home training before entering school, and in the entire out-of-school environment. It shows that the child's standards of morality differ from those of the adult. It furnishes information concerning the development of the moral nature—sense of law, sense of truth, attitude towards authority, conscience, selfishness, self-sacrifice, moral ideals, etc. To be sure, comparatively little has yet been done in the study of the moral development of the child, but this little suffices, notwithstanding individual differences, to show that the field is rich in suggestions for moral training.

It is not enough, however, that the teacher should profit by the results of others inspired by this point of view. The most important advantage of the genetic point of view is its effect upon the teacher himself, once he really gets it. He looks upon the same school equipment, the same daily routine, the same boys and girls as before, but his attitude towards them is as different as was the astronomer's attitude towards the heavens when he passed from the geocentric to the heliocentric conception of the solar system. No longer ability to pass examinations, nor discipline, nor athletic standing, but the child himself becomes the central object of the school. The full meaning of the obvious principle "the child is not made for the school but the school for the child" is recognized.

Again, our study emphasizes the immense number of means available for moral training.

The advocate of a particular means, such as direct moral instruction, usually overlooks or underestimates the many other forces of the school which make for character. This was a fault of the framers of the French course of study. Judging by their statements, they expected moral instruction to be the panacea for the moral ills of French life. But the differences in individual children, and in the same children at different times, make necessary many ways of approach, and demand that all be kept open.

The organization of the school throws open to the alert teacher a great number and variety of such ways of approach. Moral instruction, including the use of proverbs, mottoes, injunctions, exhortations and precepts, has a place in the school, and perhaps no school is entirely without it. But it does not follow that such instruction should be given at stated times as fixed lessons, and least of all from text-books. A brief word now and then, called out by some incident of school life and earnestly uttered, is worth more than a score of ordinary text-book lessons. Moral instruction has value according to its opportuneness, and the tact, sincerity, and moral earnestness of the teacher. It must be sympathetic, individual, related to experience, and based on an intimate knowledge of the one instructed. "The inculcation of moral rules," says professor Dewey, "is no more likely to make character than is that of astronomical formulæ." (5, p. 314.) Professor Roark tells of a high-school boy who, on being expelled from school exclaimed: "I got fired, but I got 98% in ethics."

In the lower grades stories and fables, in the higher, reading lessons, history and literature furnish rich stores for cultivating the moral judgment and for fostering high ideals. But the teacher must, for the most part, allow the moral of the lesson to find its own way into the lives of his pupils. He may, however, see to it, particularly in the lower grades, that it is suited to his pupils' needs, just as a gardener surrounds the roots of a plant with soil rich in those elements which the plant can incorporate into its life.

Among other school subjects, manual training, nature study, and school gardens are most important for moral training. An eminent educator has said: "The chief value of nature study in character building is that like life itself it deals with realities: Nature study, if it be genuine, is essentially doing. This is the basis of its effectiveness as a moral agent." (15.) The same may be said of manual training and of school gardening. All three of these subjects serve to furnish the pupil with pleasant occupation for leisure moments out of school, and thus to remove him from the bane of idleness. They teach respect for property rights. A lad of 14 in the Lyman School for delinquent boys said to the principal one day: "Mr. P., I 've learned not to steal. Some fellow stole my finest musk-melons, and I know now how it feels." Patience is inculcated by them, since the pupil must wait for results till his labor, or that of nature is completed. In so far as they contribute to muscle and nerve they help to build the foundation of positive moral character. It is noteworthy that experience has shown manual training and gardening to be two of the most potent forces for reclaiming deliquent boys.

We have seen that games and play may be very important factors in developing self-control, initiative, co-operation, respect for the rights of others, loyalty to the social group. They are also of great value to the observing teacher in revealing the characters, temperaments and dispositions of his pupils.

It has already been intimated that physical training is significant for character. Herbart said long ago: "Sickly natures feel themselves dependent, robust ones dare to *will*. Therefore the care of health is essentially a part of the formation of character." Evolutionally the development of the human muscular system leads that of the intellectual and moral life. Recent studies, notable among them Mr. Puffer's study of the physical, social, intellectual, and moral qualities of 100 delinquent boys, show a close relation between perfect physical development and positive morality. In boys' camps and summer schools this is recognized. Dr. Talbot, at his boys' camp at Lake Asquam, New Hampshire, produces almost marvellous improvement in the mental and moral lives of backward boys, by simply giving them an abundance of sleep and out-door exercise. Physical training suited to the needs of the individual pupil will some day be generally recognized as one of the first essentials to character-building.

Even the arrangements of the building as to light, heat, ventilation and sanitation contribute to or detract from the general orderliness of the school. Every teacher knows that many a case of discipline with far reaching consequences, has arisen from poor ventilation, and many another from narrow halls.

Discipline and management are immensely rich in possibilities for character-building. The aim, however, must not be merely good order and absence of friction, but the development of moral self-hood through co-operation. "Breaking the will," has no place in the school. Military dicipline may "hold down" even vigorous, healthy boys, but it utterly fails to build up character. The child should early be made to feel a copartnership in and a responsibility for the government of the school. This is done admirably in a well managed "school city," and may also be done equally well without such elaborate machinery.

Self-emulation, encouraged by comparison of the pupil's work of one month or year with his own work of an earlier date, such as is possible in French schools by means of the *cahier*, may well supersede much of the vicious competition promoted by examinations and prizes. Col. Parker never tired of condemning "the systematic cultivation of selfishness by bribery—percents, material rewards and prizes."

The routine of a well managed school, as Dr. Harris has so ably pointed out, cultivates habits of punctuality, regularity, and system—marks of character often too little recognized. (11.)

Pupil organizations, such as clubs, Legions of Honor, and the like in the upper grades, and in the high schools literary and debating societies, athletic associations, fraternities, and musical clubs, particularly if spontaneous organizations, are important moral factors in the school life.

Even the school janitor is a moral factor of no little consequence; his character and reputation, his attitude towards the pupils, as well as the thoroughness with which he does his work, are legitimate and necessary subjects of inquiry on the part of the board employing him.

It is vital that there be such an assignment of school work that every pupil, not merely the brightest, nor yet all but the dullest, *but all* may be conscious of progress, may feel the satisfaction, the power, and the will for further effort, which come only from doing, from overcoming obstacles. It is the glory of manual training and nature study that they consist essentially in doing. They furnish to many a pupil, who would otherwise seldom experience it, the consciousness of progress.

Enough has been said to indicate the great number and variety of means afforded by the school for moral training, though the catalogue is by no means complete. It needs to be added that all forces must harmonize, must work together, not only for character, but for the same kind of character—and that, democratic manhood—if the best results are to be realized. It has been seen that a chief fault of French moral education is that the organization and management of the school repress the type of character which instruction seeks to develop. Many an American teacher encourages moral-selthood by every means save the essential one—giving his pupils an opportunity to practice it. Many another urges his pupils to honesty and truthfulness, and then encourages their opposites by watching for them.

Our study leads also to the conclusion that the school can do much more for the moral training of its pupils in their out-of-school lives. "The end of the school is its effects upon the home," writes a Swedish educator. (17.) Henderson's book is permeated with the idea that the pedagogy of the future will concern itself far more with the child out of school than with the child in the school. (12.)

Sociologists lament the decline of the home, owing to changing industrial and economic conditions. It is unquestionably true that the average home occupies a far less prominent place in the life of the child to-day than it did a generation ago. The social environment has become a more powerful factor. The home, whether wisely or not, has delegated a larger share of its responsibility to the school. The school has been obliged to concern itself more and more with the health, the nourishment, the environment, and the activities of its pupils during the many hours of the day when it does not have direct supervision over them.

The means for making the school more effective in the home lives of its pupils are chiefly two. One of these is mothers' meetings. These are held in the schools of many of our cities. They are specially valuable in the poor and foreign sections since they bring the school and home into mutual sympathy, teach the mothers how to care for the physical and moral needs of their children, and implant in the homes some of the school's ideals.

The second and by all odds the most important means of influencing the out-of-school lives of pupils is the sheer momentum of school activity. The school can, and frequently does, start in its brief five hours of the day, activities possessing such inherent force that they *must* work themselves out in the child's leisure and recreation. Only such activities, as appeal strongly to the pupil and connect readily with home interests can ever acquire this momentum. Manual training, nature study, and school gardens possess these qualities in a marked degree, though the opportunities for their practical application in and around the home are often pitiably meagre. Only a few days ago a little fellow accosted me on the street with: "Say, Mister, do you know birds?" He then gave a description of a new bird he had just seen, and wanted to know its name. Nature study had given that boy something to think about when out of school. Games also may be taught, as they are in some of the schools of New York City, expressly for the purpose of providing the children with suitable recreation when away from the school. Teachers in the higher grades are beginning to make serious efforts to influence the home reading of their pupils and to give them permanent interests in good reading. Rapid increase in public library facilities has made this an important, though extremely difficult problem. A grammar school principal told me recently that, after several years of carefully directed efforts by herself and her teachers to influence the home reading of her pupils, she found by actual investigation that almost nothing had been accomplished.

Finally this study forces one to the conclusion that special preparation of teachers for their work of moral training in the school is the first and chief prerequisite of increased efficiency. "School reform is always schoolmaster reform."

When all has been said, the fact remains that the moral training of the school to-day is haphazard, unsystematic, unscientific. Part of it is directed in a chaotic sort of way by the teacher, whose methods are chiefly the result of accident. The greater part is left to chance; it may be good, it may be bad; it may be in harmony with that directed by the teacher and it may not. And yet practically all educators are agreed that the fundamental aim of education is character.

Teachers' training schools are doing little to improve the situation. True, the German teacher is specially trained for his religious teaching. It is true also that the French teacher devotes considerable time in the Normal school to preparation for teaching *la morale*. And many, though by no means a majority of English teachers are prepared to some extent for teaching Scripture lessons. Besides, nearly all of the teachers of Germany and France and an increasing percentage of those of England and America, have a general pedagogical training. These facts must not be overlooked. It has already been pointed out how general pedagogical training of teachers is related to the moral influences of the school. Few will question that any country does wisely in demanding special training in religion and morals of the teachers of these subjects.

However, neither general professional training as it is given to-day, nor such special training as that given by the German, French or English normal schools is sufficient. The former gives almost no attention to moral training either direct or indirect. The latter concerns itself only with direct instruction, and seeks to give a comprehensive knowledge of what is to be taught rather than of the best methods of teaching it. Either separately or together they fail to give a teacher anything like adequate preparation for the great task of moral training in the school.

But how shall such preparation be given, and what shall be its nature? It should be given in every normal school as a separate subject, and by an expert. It should also be made a regular part of the work of teachers' institutes, and of the training given to teachers already employed in city systems. It should become the heart of all professional training of teachers.

The direction which special preparation of teachers for moral training should take has been intimated in the preceding paragraphs. Much attention should be given to the place of the teacher's personality. Child study should be pursued with special reference to the development of spontaneous interests and of the moral nature, and also to individual differences. The teacher must acquire the genetic point of view which recognizes the child as the centre of the school's life and effort. He should be led to appreciate the physiological basis of character. He should consider the place of the school in moral training, in relation to the home, the church, and the social environment of out-of-school life—this in order that in actual teaching he may be led to study the moral environment of his school and of his individual pupils. He should be made familiar with the great variety of means which the ordinary school affords for moral training, both within the school and outside, giving attention to the possible contribution of each and to their relative values. He should be led to recognize the necessity of harmonizing all of the moral forces at work in the school. Special methods of moral training made use of in particular schools such as Abbotsholme, the Ethical Culture School of New York City, the Elmira Reformatory, etc., should be studied carefully. The practice school should be utilized for illustrative and experimental purposes. All this should be additional to a general pedagogical training, or better, an essential part of it.

Thus equipped, the teacher in his classroom and the principal in his building, each having been selected only after his personal character has been carefully investigated, should be given absolute freedom to work out his own method of moral training, and his own plan of organization and management. Both may be given suggestions by higher authority, but neither should be required to maintain a certain kind of discipline or organization, or to teach a given course, or in fact any course, in religion or morals. Nor should they be forbidden to teach either, so long as they avoid offense to the consciences and religious beliefs of pupils and parents. Moral personality is the most precious possession of any teacher; let him share it with his pupils in whatever way he finds best, so long as he offends none.

Such are the suggestions resulting from this comparative study of moral training in the schools of Germany, France, England and America. They would not, if carried out, make the school a perfect institution for moral training—the millenium is not yet due. They probably would not implant, though they would intensify, moral earnestness in the teacher. But they would give unity, definiteness and system to the teacher's most important work—a work now left largely to chance. They would tend to do for moral training what modern pedagogy is trying to do too exclusively for physical and intellectual training—give it a scientific basis.

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SUGGESTIONS ON TEACHING ENGLISH.

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The compositions printed at the end of this paper demonstrate, I believe, the theory that young children can be taught to write well. Perhaps the best way to make clear my method of teaching English is to give my personal experience. To begin with, I am convinced that English is the most important work in the grades; that the ability to appreciate the best thoughts of others and to express for others one's best thoughts is the greatest acquirement; that no other study so develops and directs the individuality of the child. Written work should be emphasized in the lower grades because children in the fifth grade are more susceptible to outside influence than older children and they are not self-conscious in expressing their thoughts. For these reasons, they soon learn to write with a freedom seldom acquired in later years.

My aim when introducing the work is to interest the children and to make it seem as natural and easy to write as to talk, and with this end in view I tell the children in an easy, simple manner what I saw on the way to school. They are interested, and an animated talk follows. But they do not confine themselves to observations of the morning. My talk has awakened a different line of thought in the mind of each child and this individual thinking is a pleasing result. I suggest that as there is not time to hear what each child wants to tell that they may all write what they want to say, and add that I shall read the best aloud the next day. On the second day they are very much interested in the themes read and each child has an ambition to write something good enough to be read aloud. Many of the children have made up their minds what they want to write about, but to such as have not I put a few suggestive questions as: Did you go to the country this summer? What did you see? Can you tell me what you did at a picnic? What did you see at the park?

As a suggestion for the third day, I tell something interesting about a pet which I once owned and my talk is followed by incidents told by the children. The transition from talking to writing is made without conscious effort on the part of the child. Each child on the following day tries to present his pet in a good light, drawing oftentimes upon his imagination. But this presentation does not satisfy all of the children. Pauline asks if she may bring her cat to school. Permission is given, and the next day kitty visits us. She wanders about unconscious that the children are watching every movement and when the time comes for theme-writing "Pauline's Cat" is well described. Other pets come to school. Ludisa brought a turtle home with her from the lake shore. She has a string fastened through its shell and we tether it to a chair and many children find fifteen minutes too short a time to write all that they want to say about "Ludisa's Turtle." However, while all are interested in this particular turtle some children prefer to write about some other animal which they have observed. James saw a squirrel gathering hazel-nuts. It dug a hole and buried them, carefully patting down the earth and laying a stone on top. This observation of animals continues to be of interest. The children watch the birds, the insects, everything that has life with the view to the material which they furnish for a theme. They are pleased with the thought of writing from the point of view of the animal. I illustrate how this can be done by telling a story which a schoolhouse mouse tells to its little ones and the creative faculty of the child is awakened.

By this time, the habit of daily theme-writing is established and the children look forward to this exercise with pleasure. The aims of the first lessons have been reached; the children are interested and they write as naturally as they talk. Now it is desirable to introduce people into their work, and I begin by telling a story of my childhood. It is a curious fact that children of ten, eleven and twelve look upon their earliest childhood with great interest and like to write reminiscences of that first period of their remembrance, and so they take up this part of the work with enthusiasm. They are, moreover, encouraged to write an observation at any time or to write of any good time they have had. The choice of the material is significant of growth. Then, too, children write best about the things that they are most interested in, all children are interested in younger children and my suggestion that they write about the baby pleases them. If they are not so fortunate as to have a baby at home they borrow one for the occasion and the children whose baby brothers and sisters make a public appearance at the theme-reading period the next day are admired as well as envied. I then suggest that they write an autobiography and tell them certain points on which they can enlarge. At different times I describe different types of interesting people, and they are soon able to write on 'the most interesting person that I saw yesterday,' 'my dearest friend,' and some children create a character.

The next step is to teach them how to introduce different characters, and I begin with the dialogue. I relate an imaginary conversation between an old and a young turkey previous to Thanksgiving and from this suggestion many original themes grow which in creative thought I confess are an improvement upon the original. Indeed some children carry the idea so far that they introduce a plot which ends with the escape of the turkeys and the consequent discomfiture of the farmer. Dialogues become popular. Conversations between trees, wild-flowers, animals and children, show originality and imagination.

The dialogues are followed by themes introducing conversation. I tell the children about a walk and relate a conversation with some one whom I met, trying to have the conversation short and to the point. Such a narration is followed by similar ones by the children, and they, being unconscious of my motive in telling the story, are themselves unconscious in their talks. The suggestion that the stories told would make good themes meets with their approval, some even venturing the opinion that they have read worse stories in children's books. The children now introduce conversation naturally into their stories and, as was the case with the dialogues, some work out little plots. They show readiness in writing about people, animals and things; they introduce conversation and they sometimes have a little plot but they have not consciously introduced a setting.

This work of seeing and interpreting nature is most interesting and important. It creeps into the work consciously at times, at other times spontaneously. I tell the children of some sweet commonplace thing that gave me enjoyment, as the shimmer of a wave, the gold of a leaf, the swirl of a gutter-river, the glisten of the frost, the bend of the willow, the wreathing of the smoke, the flight of a dove, the voice of the wind, the red heart of the rose, the smile of a child, the antics of an animal—and have found that the heart of a child responds to the same touches of nature. They soon bring to me their impressions and these impressions begin to appear in their written work. But a conscions effort is made toward producing a setting to the story. I describe a sunset and many children think that they saw the same one or one more beautiful which they wish to describe. We decide to observe the sunset and to write a description of it. This is done and the results are sometimes surprisingly good. Another time I describe a favorite landscape, and again each child has one in mind about which he is anxious to write. Indeed there is never any hesitancy on the part of the children about writing on any theme which is suggested, and they thoroughly enjoy this work. Foggy days come frequently in the autumn and we talk of the curious appearance of objects we have seen through the mist. A snowstorm gives us splendid material, a rainstorm is suggestive of new thoughts. These settings for a time form themes, but I suggest that they introduce a setting into a story and this they soon do remarkably well. Indeed they become critical when a story does not have a setting.

This development of the setting adds color words and the children discover that they need a larger vocabulary. I suggest that we give words suggestive of color and head the list with "shadowy," "brilliant," etc. It is surprising how fast the list grows. Some one discovers that some of these adjectives, for I call words by their right names, can express action "whitened," "darkened," and words of this sort frequently appear in the themes. They become more critical of the themes read aloud and are indeed rather severe, much more so than the teacher, but children are not sensitive to the criticism of each other.

Closely connected with the color words are the words suggestive of sound and motion. After a windy night I ask what words will express the sounds made by the wind. The list begins with "shrieked," "moaned," "whistled," and it grows until I get many suggestions for my own writing. Children are such responsive, spontaneous, original things! It is strange that we do not oftener go to them for inspiration. They like to make lists of this sort and I suggest that they listen to the water, the fire, cries of animals and calls of birds and write lists suggestive of the various sounds. Not less interesting are the motion words and again we think of some specific objects as "the grass" and we get such words as "nodded," "waved," "fluttered," "bended." Then we take other words as "the path," "the fire," "clouds," "animals," "people."

The use of words of color, sound and motion is naturally followed by comparisons. These need only to be suggested. The child will create his own although he often borrows one which particularly pleases him as "as brown as a leaf in autumn," "as clear as the eyes of a child," "as blue as a summer's sky," and he invariably commends work that contains comparisons, although he criticises adversely work that contains grotesque or trite ones.

But some one may ask, "What about the time and the material for these themes and how do you manage the criticisms?"

Themes should be written daily. From fifteen to twenty-five minutes should be allowed for the writing, and during the time nothing should happen to distract the child's attention. All of the children should write at the same time. The suggestive talks and the reading of selected themes consume twenty-five minutes each day, but since no individual preparation is necessary on the part of the child, the time given to theme-work is less than the time allotted to arithmetic and the other so-called fundamental studies.

In regard to the material, I always suggest a subject if the child wishes it, but the theme work develops the individuality of the child and many prefer to make their own selections, following, sometimes, suggestions already given. The study of the theme-work of the child shows me his personality as nothing else can for in this grade he writes without restraint. The imaginative, dreamy child will write fairy stories; the practical child will tell clearly what he sees and does; the artistic child paints pictures with his words; and not infrequently the poetic child writes a poem.

The criticism is a very important part of the work. The themes are looked over carefully each day, and it is not drudgery; I am too much interested in the child who is daily giving me his personality; and there is a fascination in watching each child's development from day to day. Children like to produce a good piece of work and they like to copy a paper correcting the mistakes. At first I mark only misused verbs, mistakes in capitalization and punctuation, but I add to these corrections soon by reading an interesting theme and telling why I like it, and also by calling attention to mistakes and telling how work can be improved. The criticisms made are aptly applied by the children to themes read aloud and sometimes they venture original criticisms. They very soon become discriminating and are at times rather cruel in their frankness, but no one seems to feel hurt and a criticism made by a child makes a decided impression on the child whose theme is criticised. Frequently such criticisms are made as: "It was n't worth while," "Too long in getting started," "No point to the story," "No setting," "Did n't stop when he had finished," "Too many adjectives," "Sentences choppy," "Did n't know what he wanted to say," "Trite," "Too many details." But not all of the criticisms are adverse. Children commend originality, imagination, movement, and to a certain extent structure and phrasing. They are curious as to the source of the material and they do not hesitate to accuse each other of plagiarism. They do not object to imitations but they criticise a child who does not indicate in some way that he has gotten his idea from a book or from some other child. They admire most the child who can "make up stories," and they frequently say some one's story is better than they have read in books.

Each child should have individual attention and I manage to give it in this way: The themes of yesterday have been returned and lie on the desks. As the children are writing their new themes I pass from seat to seat and talk with each child about the mistakes which he has made, giving him such individual help as he needs. Each child's needs are different, and a general criticism seldom hits the ones it is aimed at. Some children, too, need to have a point emphasized, while for others a hint is enough. This method then is fair for all. The slow child gets the reiteration which he needs, and the bright child to whom this is unnecessary and stultifying, can be given suggestions as rapidly as he can take them.

Composition in the Eighth Grade.

The teaching of composition in the eighth grade is fascinating but the requisites on the part of the teacher are correspondingly high. In this work I always feel that I am approaching the "holy of holies," for when a feeling of confidence is established and maintained, the child gives me his individuality, his composition becomes the outward expression of what he is. This gives me toward each child, a reverent attitude, and appreciation of the dignity and respect due him, as the highest manifestation of the creative principle of God or good.

One must be able to put one's self in the place of each of the two hundred children whom one teaches daily. One's imagination must be great enough, not only to classify the children according to certain types but must enter intimately into the life of each. It is as if one were permitted to open the windows of the soul and let the light which each individual can reflect from the Great Source, shine out; or given the privilege to supply stimulus to the different impulses within the child so that he may be able to express them in words; and allowed to watch the unfolding of these impulses day by day. This work requires time and effort, but there is a fascination about it found in nothing else. Children are as diverse as the flowers of the field, and when through imagination one is able to enter the invisible realm in which each is supreme, one should remove the shoes from off one's feet for the place is holy ground.

If one's imagination is great enough to enter into the child's world, then, and then only, is it possible to know his interests. They are what must be utilized, they must be the common meeting place, the ground from which the teacher gives him a chance to express himself in his own environment and in the direction of his own activities.

It is necessary for the teacher to organize the child's impulses so that they will get some place; that out-going energy must be made use of. Some means of connection between his present interests and those interests which he ought to have must be found. The somewhat chaotic condition of his thinking must be systematized in order that the output may be logical expression. That work with the child may count, not only must one know where to begin but one must have the vantage ground of a broad outlook. One must have had experience in writing and must also have a definite notion of the work one expects to accomplish with the child while the sequence in which the work of developing the child's expression is presented, must preserve the natural association of the ideas of the child.

Very few of the children who come to me have had real composition work. They have not learned to look upon a theme as a finished whole. The work viewed from their experience in writing sentences about unassociated ideas, has made them hate the very sound of the word composition, and they look upon me, at first, with some distrust. The possibilities which my position as special teacher of composition gives me for inflicting stupid, senseless lessons, must seem to them appalling.

The first step, then, is to disarm their suspicion. I hold before them a very high aim. I tell them that I have known children who were able in a year to write so well that it was a pleasure to read their work, also that I shall preserve everything that they write and when the year's work is finished they may bind it into a book; and if possible, I show them a book which some child has made. The project begins to appear alluring but it looks hard.

With apparent irrelevance I say that I should like to tell them about a scene which I hope that they may be able to see as I describe it. I begin by giving my point of view. After finishing the description I ask what stands out most distinctly. Several other points of view are presented and the children asked to suggest others, which are written upon the blackboard. I then say that they may write a description from any point of view which they choose and that it may be the first page of the book. The work is beginning to appear possible as well as interesting. Some of the best themes are read the next day and also some descriptions from good literature. The imitative instinct comes to the foreground and some one asks, "May we write like that if we want to?" The descriptions are at first short and are written each day for perhaps eight days.

However, before the interest flags, I describe some person and they quickly transfer their attention to people. They recall descriptions of people which they have read and my suggestion that they make their people alive, is appreciated, The next step is to place a person in a scene, and many children at this point anticipate the work and introduce action ; thus there is no abrupt transition between description and narration which follows.

With the narrative the work becomes more individual. Many children have, by this time, caught the spirit of creation and prefer to select their own topics. It is interesting to notice their method of development. Some children prefer to write incidents of their early childhood, some give the results of their observations and are even known to watch, clandestinely, children at play, for their material, while others write stories which are wholly imaginary. They are beginning to find all sorts of people interesting, and as the work goes on, I try to have them make each character about which they write, consistent; their material is never criticised from an ethical point of view, although the conversation that creeps in is not always choice. The work has grown, so that with some children the narration is so long that one story represents a week's work. They are somewhat loathe to leave narration, but the next step appeals to them when they learn what an autobiography is. I find that the children need a general outline for this work, and the writing of the complete essay requires several days. They have begun to be intensely interested in themselves, and they write with perfect freedom and fluency. It is always a pleasure to read these themes. Although they are perfectly willing to have their life histories made public I do not read any of them to the class, but they give me an insight into the heart of the child which is very helpful.

The author whose biography they now reproduce seems to them to be alive. Not only are they curious about his life but about his work and how he happened to write at all. They draw analogies between themselves and him and he becomes to them an inspiration and a model. Indeed I sometimes try the experiment of asking them to write an imitation of some description which they particularly like, and some of the results are good.

The children are now somewhat curious to study the work of some writer from a constructive point of view and the "Legend of Sleepy Hollow" furnishes adequate material for this purpose. It is interesting to know, that now, the story itself, does not so much appeal to them as the way each paragraph is built and the effect which it is meant to produce. The words themselves and their arrangement interest them. They pick out the topic, notice the sequence, and begin to have a feeling for the style in which the story is written. The confident assurance with which they take my suggestion that they write a criticism on the style of the author is equalled only by the candor of the criticism.

I utilize the constructive interest which has been awakened by teaching exposition. I begin by having each child describe clearly, the way by which he has made some article. Much originality is shown in the selection of subsequent work in exposition. Some children prefer to write about articles that they have made or seen made. Some describe a mental effort as, writing a theme or studying a reading lesson, while others theorize about what they would do under given circumstances in which their escape from some predicament involves some ingenuity.

The reason, which the work in exposition has helped to develop, is cultivated by teaching them simple argumentation. We develop the brief and both sides of the argument orally at first, and they begin to be wildly enthusiastic when they commence the written work. The questions chosen for debate are of special interest to them and I permit them the greatest freedom of expression. They soon discover that extravagant statements are not proof and modify their manner of their own accord. However, as they are allowed to choose the side upon which they write and the debates are read, they learn that oratory often affects the decision of the judges.

It is then perhaps permissible that they be given some notion of what an oration is, and after studying four or five orations they write simple speeches such as they might have occasion to give; as a welcoming speech or a farewell address.

An essay on an abstract subject naturally follows; and strangely enough, children like to express their views on Friendship, Patriotism, and Courage. It is of great interest to detect the high ideals which they possess. Some of the children, too, approach a kind of pleasing oratory, especially in the Patriotism essay.

But they hail with delight the next work. They are to write a real drama, one which might be played. The dramatic instinct is so strong in most children that the preparation for this work requires little development. However, they discover after an attempt, with possibly an adverse criticism from the class which is given and received in good spirit, that not only must the situation be chosen carefully, but that the characters are not real unless the writer is able to project himself into them. But after two or three attempts some of the dramas are not worse than those one sometimes sees staged.

The last work of the year is a short story. Their work with the drama has helped them to realize dramatic situations and they have produced some very successful short stories of perhaps four thousand words in which various writers have chosen effective situation, realized the characters, selected significant details, and made the story move toward the end, in a manner suggestive of good writing in the future.

Although the work required was confined to prose, many attempts at poetry were made. The idea of rhythm and meter, was developed and the children appreciated to a certain extent, figures of speech, and figurative language. I encouraged them to write poetry, and fully seventy children handed me attempts at poetry which they wrote, as they expressed it, when they felt like it. Some of these productions were mere jingles, but perhaps twenty of them had some merit. The two which I reproduce rank among the twenty, although they are an average in that set.

THE LAKE.

Oh lake with waters long and wide!
And heavens darkest blue,
The boats along your surface glide,
Their circles are not few.

Your banks are fringed with dark green grass,
The long blades break your gloss;
They seem to grow in one huge mass,
And near them grows the moss.

The branches of the willow trees
Reach down to your blue water,
You blow and bend like a small sea,
But gentler and softer.

Oh you look forth to the morrow!
You think of naught but joy,
You would have both joy and sorrow
If you were a small boy.

J. V. K. Age 13 yrs. 1906.

THE BROOKLET.

The babbling little brooklet,
Flows over hill and dale,
It's life is sweet contentment
With ne'er a storm or gale.

It sings a cheerful story,
In its own cheerful way.
Its simple little history
Is told from day to day.

The cat-tails grow within it,
The willow bends her head;
The birds come down to drink it
And are sure of being fed.

It never is molested;
It never does intrude,
Mother Nature taught it better
Than ever to be rude.

The frost, its only enemy
Comes once in every year,
And stops the babbling little brook
From its songs of cheer.

M. G. Age 12 yrs. 1906.

COMPOSITIONS IN FIFTH AND SIXTH GRADES.

SPRING'S ARRIVAL.

Girl, 11 yrs. Winter was going away, a pitiful and touching object to all but the scornful eye of Spring. His hair, long and snowy lay upon his throbbing breast like a great white cloud. His eyes were full of tears and dim. He was worn and bent with age and very feeble. Old winter carried on his back a load too heavy for his tired limbs to support, a huge pack of snow. On his head still glittered the icy crown, bright and beautiful in the sunlight. The old man staggered to the gate and blew helplessly at his candle which was now flickering, going out. As he opened the gate the candle was extinguished and fell from the shaking fingers. Then Mother Nature ever kind and always ready to receive him led him back to his home where he would be happy. . . . Spring came dancing in, his golden curls dancing about and his eyes sparkling like icicles. His tall form and broad strong body heaved with pride as he strode vainly through the year's garden. Now he laughed rudely and now, smiled the sweetest of smiles. Now he relapsed into thought and his face was like an angel's, while now he burst into a flood of tears only to grow joyous again. He pinched the crocus blossoms, then kissed them as tenderly as Mother Nature could. At last he caught sight of a buttercup. All haughtiness faded from his face and at that moment all things cried, "Welcome to Spring!"

A RAG DOLL'S EXPERIENCE.

Girl, 10 yrs. I feel rather tired and bent as I am a rag doll nine years in age. My hair was once a golden color and I had blue eyes and pink cheeks. When I was given to my mistress I had on a pink dress and a pink sunbonnet. I had pretty shoes and stockings and underclothes and many other clothes and I was taken very good care of until Dorothea's fox terrier came and bit me. I could not do anything until he had dropped me. He rolled his eyes and Dorothea said, "Bad dog!" He bit my leg and the cotton showed very plainly. Dorothea immediately sewed up my leg but it did not improve my feelings. My dress got very dirty and so she washed it. It has been washed many times and it has many tears in it. I am now in a new dress as I am going to a party. This one is a white one and it has got a pink sash. I have a new bonnet and some shoes and stockings. I am glad to say that I have got a new coat also. I am extremely happy to say that my legs are painted over. She was once left alone and so she quickly dressed me and called me, "Mother's pet."

I am now thought very much of because she broke her china doll and gave me all of her things.

But Alas! To-day is her birthday and she got her new china doll. She took off all of my new clothes and put them on her new doll.

THE WREN'S HOME.

Girl, 12 yrs. In the window sill of a house in the woods was a small box with a hole in the middle and this was the wren's home. It was a small box set there by a little boy who wished that some sweet songster would choose it for a home. One day when this little fellow was playing near the house he saw a wren who was carrying a feather in its mouth. He knew that it was building a nest somewhere and so he watched it. It flew straight to the small box where it laid the feather. It brought sticks and strings into the box and as it was flying about looking for other soft things its sharp eye fell on a ball of yarn lying on the window sill. It took hold of it with its sharp claws and flew up to the box. It wound it around and around, in and out until the nest was soft and warm. Here it laid its little eggs and raised its young. And so often did the little boy go to see the nest that mother wren was not afraid and came back to the box year after year to raise her brood.

Original Story.

THE PIGS' QUARREL.

Boy, 11 yrs. Trouble was brewing between Mrs. Brown's pigs and Mrs. Lasalle's pigs. Although Mrs. Brown was the wife of the gravest Deacon in Summerdale and Mrs. Lasalle was the wife of the longest faced preacher in Summerdale, the two pigs entirely ignored this sacred fact. The trouble was because a rickety fence kept the two pigs apart and that Mrs. Lasalle's pig happened to have the more dinner than the other pig one sultry day at noon tide. Mrs. Brown's pig said with a grunt to the other:

"You need n't turn up your tail at me in that fashion because you are better fed than I. Just because you 're the pig of the wife of the Summerdale preacher you need n't think you 're the only pork in the world," a grunt.

The accused pig coolly retreats to a far off corner of his pen and noses around for some corn cobs to fill his well fed but piggish stomach with. When the accusing pig begins again:—

"Oh you crooked-tailed big-nosed grunting old thing you wont get out of it over there, because I 'll knock the fence down and" a grunt "Whew but Ill find out how much pork there, is in you."

With these words he ran furiously sideways at the fence and slipped skinning his dirty fat back on the fence boards. Whereupon he rose, and walked with a baffled spirit to his favorite wailing place behind a big fallen stump. This gave the other pig courage and he came to the fence and said:—

"Remember you are as much of a pig as I—"

With these words the baffled pig charged furiously at the fence which he knocked over on the other pig's back. It began to squeal harder than the Thomas Orchestra can play. He soon crawled out and found that the wall of the other pig's pen which led into the garden was over. The two pigs scampered into the garden in blissful content, fast friends.

WHEN EVENING FALLS.

Girl, 12 yrs. When slowly evening's curtain falls, the baby's eyelids close, and mother lifts her gently up, and takes her to her crib.

As evening's shadow darkens, the cattle, lowing far away, across the hills, come back to home and rest.

When evening softly steals along, the sweet flowers close their tinted leaves, and dream of fairyland.

And when it hears eve's light footsteps, the rose-bud nestles close, and closes then its pretty eye, slumbering on its mother's breast.

When softly even approaches, the fairies skip from the vine, and up and down, the livelong night, they romp and dance with glee.

As the sun sees evening, far away, his yellow face turns red, and, with the crimson of his blushes, he tints the covers of his bed.

When evening falls, the world rests.

An Actual Experience.

TRIALS OF A MOTHER WHOSE LITTLE GIRL HAS TO WRITE A THEME EACH DAY.

Girl, 11 yrs. (Mother turning pancakes on the griddle.)

"Mama!"

No answer except the sizzling of the pancakes.

"Mama!"

Quiet reigns.

"Mama!"

"Well what is it?" (Impatiently.)

"What shall I write to-day?

"I don't know and do not care what you write. Please don't talk to me while I'm working."

(Little girl gazes out of the window at the wet landscape mournfully.)

(Washing and wiping dishes after breakfast.)

"Mama!"

"Well!"

"I don't know what to write to-day."

"Never mind what you are going to write to-day. I want your mind solely on your dishes or you will break something. There! I told you so!" as a dish went clattering to the floor.

(Mother combing the child's hair.)

"Mama!"

"Write about a dog. Why don't you?" (said her mother knowing what was coming.)

"Every one writes about animals and its getting common.

"Why don't you write about the sunrise this morning?"

"Did n't see it."

(Clock strikes half past eight.)

"There, I'll be late if I don't start now," and whisked out leaving the mother tired and worn to begin the day's duties.

THE HYGIENE AND PSYCHOLOGY OF SPELLING.

By Wm. H. Burnham.

The current discussions (28-31) in regard to spelling reform bid fair, at least, to call attention to the importance of the economics of the subject and also to the complex psychology of the processes involved. If the possible saving of time from simplification in the orthography of a few hundred words is worthy of the serious consideration of scholars, literary men, and the highest government officials, it is not unimportant to consider the whole subject, and especially the methods of instruction in spelling, from the point of view of economy and hygiene.

Perhaps it may be found that the dropping or change of a few letters in case of the three hundred words now under consideration is after all a matter of minor importance either one way or the other, but that the really important reforms should be made by simplifying instruction and by regard for psychological and hygienic principles.

It seems at first that the most that can be said of the hygiene of spelling is ancient history. Modern pedagogy gives oral spelling a place of minor importance; and in spite of the idiosyncrasies of English orthography, to learn to spell in connection with writing is not an extremely serious task. It deserves special attention, however, because of the time devoted to it. Dr. Rice (36) in his investigations in the schools of twenty-one cities in this country found from 6 or 10 minutes to 50 minutes devoted each day to spelling. Mr. McKay (26) collected statistics in the town of Pictou, Nova Scotia, in regard to the amount of time spent in learning spelling both at home and in school. The gross results were as follows:

Pupils from 5 to 7 yrs. were spending 74% of the time on spelling.
" " 7 " 9 " " " 47% " " "
" " 9 " 11 " " " 37% " " "
" " 11 " 13 " " " 25% " " "

"That is, forty-nine per cent. of the whole time of study at home, and in school, for the first six years was absorbed in spelling lessons, or over forty per cent. of the first eight years of school time. But making allowance for other work done incidentally in connection with the spelling, such as the study of definitions, etc., and incidental reading, expression and elocution in the higher classes, more than twenty-five per cent. of the first eight years of school work was absorbed entirely in overcoming the difficulties of our orthography." (26, p. 10.)

Lay (21) estimates that for the eight school years of the People's schools in Germany on an average one hour every week is sacrificed to orthography. As much time is devoted to it as to instruction in history, natural science, and geography together. The reason that so much time is devoted to spelling in German schools is not far to seek. In Germany the instruction must give practice in eight different alphabets; namely, the German large and small script letters, the Roman large and small script letters, the German large and small printed letters, and the Roman large and small printed letters. The German orthography has developed in such an inconsistent manner that there are always innumerable exceptions to the rules, and in methods of instruction; finally, there is a confusion of opinion such as is found in no other subject. The English child, to be sure, is not required to learn so many alphabets; but English orthography is, in spite of that, usually deemed more difficult than the German.

Historical. The invention of the art of printing first brought spelling into the world as a school subject and exalted reading to the first place among the three R's. Before that the schools taught writing and reading, after that, reading and writing.

The history of the subject is not without significance; for the rôle that spelling has played in connection with the teaching of reading is an illustration of the extreme to which the scholastic tendency may go when attention centres upon the scholastic work instead of the children; and the whole story of spelling as a school subject records an interesting chapter in the conflict between scholasticism and the true pedagogy based upon psychology and hygiene. Not to go very far back we may begin with the spelling method of teaching reading. It came into universal use in the 18th century. How this could happen, and how such a method could so long keep a foothold on the earth, is a very strange thing in the history of pedagogy. It seems, says Campe (9) as if our forefathers used all their ingenuity to make the simple and easy art of reading very complicated and as difficult as possible. The development and persistence of this method is an astonishing example of fetish-worship in pedagogy. Not only did the children learn to read by spelling, but spelling was kept up after they had acquired some facility in reading. Even the most difficult and outlandish words were used. At public examinations the more difficult the words that the children could spell, the greater the skill of the teacher and the ability of the pupils were supposed to be. Proper names from the Old Testament, American Indian geographical names and the like were highly esteemed. *Constantinopolitanische Dudelsachpfeifenmachergesell* was a favorite.

A reading book published in 1766 (9, p. 30) contains the following words for spelling: Allerliebenswürdigster. Regimentsquartiermeister. Wiederherstellungszeichen. Allerverlangenswürdigster. Weysenhausveranstaltungen. Almosenamtsverpflegungsgelder. Obervormundschaftscassenbestand. Parükenmacherzunftgebräuche. Katechismuswiederholungsstunde. Religionsangelegenheiten.

Hempel (9, p. 30) in his reading and spelling-book for the first instruction, (Leipzig, 1804) begins the spelling with the word Viceoberappellazionsgerichts-president. One of the old New England primers could boast words of nine syllables. Here is one of fourteen. A primer published in Darmstadt in 1805 (9, p. 30) had such words as Johannisbeerstrauch, Räucherpulferschachtel, Hollunderbluththee. As if in English we should use the following: philoprogenitiveness, incomprehensibleness, disproportionableness, transsubstantionableness, suticonstitutionalist, honorifibilitudinity, velocipedestrianistical. In many books the most unheard-of and idiotic combinations of sounds were used. Campe[1] in his primer furnishes a good illustration: tlantlaquakapatli, tschintschanz, thundertentrunk, tschitschatschots, are among the words given.

Ludwig Hörstel (9, p. 31) seemed to think that nonsense syllables were valuable for arousing the intellect and cultivating the understanding. His primer contains among others the following combinations: Xacha, Xoko, Kara, Kari, Kuri, Pikpar, Marmar, Kakakar, Kirkur, Tatat, Tattatattat Tumtutum, Tam, Tititittit, Tititittitit, Pupuput, Papapab, Pappap, Ticktack, Tickticktickticktack, Tacktacktacktacktacktack, Tackak, Katkatkaat, Zaza, zazezaza, Zuzu, zazezizu, Zauzau, zauzeziazu, Zipzip, zappaz, zipzipzapzap, Kazkaz, Kazkazkizkaz, Kozkozkuzkiz, Pizpizpizpiz.

C. H. Wolke[2] deemed the following suitable for children between the ages of 6 and 12: Behiblobra, Kiklekrunkna, Chichleuchlauchra, Oblobribla, Pfiipflapfropfa, Schlischmoschnusschwa, Spisplosspruspla, Ksikseksuksa.

Even in recent times such combinations have been used, but many voices have been raised against such nonsense.

A multitude of witnesses testify to the results of this method. Many complained especially of the loss of time from it. Buno (9, p. 33), for example, in 1650, declared that many who showed ability in other things, after several years and much pains and vexation, scarcely were able to tell the names of the letters and to put them together properly. Ventzky (9, p. 33), in 1722, wrote as follows in his *Erleichtertes Lesebuchlein:* "Spelling seems to be a frightful judgment of divine wrath, which the righteous God has allowed to come upon us and oppress us for a long time on account of our school sins, and we fervently pray God for Christ's sake that he will have mercy upon us and take away this judgment from us and open the eyes of those who cannot see until he does, in order that a permanent foundation may the sooner be laid, and that which has long lain waste may the sooner be rebuilt."

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[1] Neues Abeze-und Lesebuch. 3 Aufl. Braunschweig, 1830. S. 216. Cited by Fechner (9).

[2] Erstes Lesebuch für sechs-bis zwelfjarige Kinder und für ire sibelerenden und erzihenden Freunde. Berlin und Leipzig, 1820. Cited by Fechner (9), pp. 40-41.

Peuschel (9, p. 33), in 1746, said that generally in the public schools two or three years were passed with indescribable pains in getting spelling and reading into the heads of the children.

Samuel Heinicke (9, p. 34), the founder of the first institution for deaf mutes in Leipzig in 1778, attacked the spelling method in a way that, as Fechner says, was very shocking to tender nerves. In a number of essays and books he expresses his disgust. In his Metaphysik für Schulmeister und Plusmacher, published in 1785, he wrote in substance as follows: "Spelling is not only altogether unnecessary and useless, but also indescribably injurious, and, moreover, the greatest folly, comparable to no other since the fall of man." And he adds: "All that the scholar carries away from his spelling is a suppressed reason, empty perception of words, a pitiful, disgusting whine, a contracted eye, a spoiled ear, and a parrot-like mode of thought; but, for his comfort, there are millions of men like him. One can give no idea of this cruel drudgery on paper. One must himself see the spellers in the spelling factories, victims of nonsense, standing like condemned criminals before the judgment seat, trembling and shaking till their eyes and ears fail, and the sweat of anxiety, their only relief, breaks out. A land with 20,000,000 inhabitants loses 10,000,000 dollars a year by the inane, slow spelling method and empty word-cram; for the constant results of this perverted method of instruction are ignorance and stupidity, from which will come crimes, contempt of religion and of morals, misery and want." "The spelling method," he exclaims, "is a greater evil than the burning of witches and heretics, a greater crime than the rack and all inhumanities taken together. For it is opposed to all natural and revealed law; it creates stupidity, crimes, diseases, and even death. It is child torment and child murder." In another place he speaks in similar Carlylean fashion, and exhausts the whole Teutonic vocabulary of scorn; and, finally, he declares that no man, as long as the world has stood, ever learned to read by the spelling method. The schoolmasters of the time were naturally very much aroused by this attack, and they attempted to defend the method. A bitter contest arose;

both parties claimed the victory. But the old method was continued in use.

Many other writers pointed out the sterilizing, deadening influence that it had upon the minds of the children. Graser (19, p. 63) characterized it as "the crudest *Mechanismus*, a real tyranny of the mind, a torment of childhood, and an outrageous libel upon human education." In a book published in 1845 (9, p. 32), he vigorously condemns what he calls mechanical, senseless lip-bawling,—referring to the use of nonsense words. It gives an adult vertigo to read two or three pages of it, and how must it be with a child who practices articulating this nonsense the whole week long? Battig (9, p. 35) in 1860, declared that children were worse off than parrots and crows, because in teaching the latter whole syllables and words were used. The children did learn to read by this old method. How did it happen? Partly, perhaps, as Zeller (9, p. 36) thought, it was the result of a process of abstraction, by which the simple sounds of the oft-repeated letters were impressed upon the mind; more, perhaps, as Hecker (9, p. 36) said in 1750, the final learning to read was the result, not of the ceaseless repetition of the letters, but of the pronunciation of the words and syllables that followed the naming of the letters.

There have been plenty of defenders of this method; but the evidence for favorable results is rather meagre. Junker (9, p. 38) in 1787, said that children of the common people usually wrote more correctly than children of the higher classes, who did not attend the public schools. This was the result of the spelling method. Others maintained that reading was learned more thoroughly by this method. One strong argument seems to have been that the spelling method was easier for the teacher.

The irony of this child torment is emphasized when we consider that the older writers of distinction, as Fitch (11) and others have pointed out, were largely free from any Pharisaic pedantry in regard to spelling. The liberal orthography of the early times is well known. Queen Elizabeth was confessedly a well educated woman, but it is said that she spelled the word "sovereign" in seven different ways. Passing to Germany and to later times, Frederick the Great, Blücher, and others are examples of this freedom.

Gradually the old methods were given up, and in recent years serious effort has been made to put the whole subject on a sound psychological basis. Much of the old devotion to the subject, however, still survives. The amount of time and money expended at the present time upon the subject of spelling is suggested by the vast quantity of spelling books published. The old spelling book, as everybody knows, had a place next to the Bible, not only in the importance attributed to it, but in the number of copies used. Up to 1885 it is said that 65,000,000 copies of Noah Webster's spelling-book had been sold. While this classic has lost ground in the face of modern competition, the total number of spelling-books of different kinds sold to-day is enormous.

Spelling holds a place of great importance in the popular consciousness and in the opinion of educators; and every little while some one notes with alarm that the rising generation cannot spell, and more attention to the subject is demanded. Nevertheless, complaints from high quarters continue. Dean Briggs, of Harvard, for example, says: "We have boys who cannot spell, men who cannot spell, teachers who cannot spell, college professors who cannot spell and who have a mean opinion of spelling." The results of all the time and effort devoted to this subject are apparently unsatisfactory; and to the question, what should be done, there are various answers, and great confusion of opinion and method prevail.

Lay (21) describes in detail the various methods of teaching orthography, and the conflict of opinion, from the time of Comenius down, and especially the views of modern writers. A brief account of this history will be sufficient.

In the nineteenth century Pestalozzi and others began to study the psychology of the subject. In 1804 Olivier (32) published his Lesebuch, in which he demanded that speech exercises for the purpose of clear articulation and distinguishing sounds should precede the instruction in reading. With him the ear and speech were the important instruments. Most of the writers since Olivier follow one or the other of two leading psychological tendencies; the one emphasizing the ear, the other the eye. Diesterweg (6) may be taken as the leader of the former tendency; Bormann (1), of the latter.

Diesterweg maintained that while the spelling of words in a foreign tongue may be learned by the eye alone, in the living mother-tongue the chief tool is the ear, that the different branches of instruction in language, hearing, speaking, reading and writing are interrelated and form a connected whole. No part should be isolated, and in all the aim should be a perfect understanding of the speech. While in spelling the chief emphasis should be placed on the ear in the lower grades, nevertheless in the later grades the eye should take the lead.

Bormann represents the other important movement, emphasizing the eye. According to him there is no simpler or more secure method than that of accurate copying; for every man retains better the impressions received by the eye than those received by the ear. Just as one who hears only correct speech learns to speak correctly, so one who sees always only correct writing learns by this means to write correctly. Hence the pupil should be guarded from the representation of any false orthography and guided only by correct word forms. Every word in written speech has its own peculiar physiognomy. The task of orthography is to help the children to imprint the physiognomy of the words upon the mind, a process which naturally occurs predominantly by means of the eye. Hence correct copying should be practiced and the teacher should incidentally, in connection with the reading, call attention to the spelling of words, to differences in spelling and the like. Writing like speaking should be learned mechanically by imitation. Strong evidence of this predominant rôle of the eye and the actual hinderance that hearing may prove to be, is found by Bormann in the alleged fact that all those who are deaf and dumb write orthographically. With them the memory of the word forms is not confused by the auditory memory of sound relations.

Others represent a combination or mediation of these two schools. Kellner (21, p. 49) seems to have had much influence, and he distinguished between the spelling of those words which are written as they are pronounced, where one can truly speak of *orthography*, and those words which are not written as they are pronounced, where we really have *heterography*. For the former class of words the ear is the supreme judge, and the rule is "write as you speak." For the latter class of words, that vary in form from their pronunciation, the eye should be chiefly active, and the rule is "write according to the writing custom." In regard to another class of words the judgment of the pupil should be exercised and attention given to the derivations and the like. Kehr (20) attempted to unite the demands of Bormann and Diesterweg placing the emphasis, however, upon the principles of the former. Dittes (21, p. 54) advocated spelling exercises in connection with the reading exercises, at first simple copying and dictation and the writing down of selections from memory.

The one psychological contribution which seems to have had special influence upon orthography was Stricker's Studies of Speech Images (41). Basing his views on Stricker's doctrine Wawrzyk (42) maintained that along with sight and hearing the muscle sense of the hands and of the speech organs should be considered, since these play an important rôle in the comprehension, retention and reproduction of words. Accordingly, Wawrzyk was the first to emphasize the motor element in spelling, and he rejected ordinary oral spelling altogether.

As Lay (21, p. 60) points out, confusion and conflict of opinion have prevailed from the time of Pestalozzi. Olivier, Grassmann, Harnisch, Diesterweg, Rudolf emphasize the sound and the ear; Bormann and Kehr, on the other hand, the physiognomy of the word and the eye; Wandes, Heyse, Mohr, finally, the rule and the understanding. Diesterweg especially emphasized the pronunciation. Bormann considered this a disadvantage rather than an advantage in spelling, and Wawrzyk is the only one who points out the significance of movements of the hands and the speech organs. Bormann and Kehr recognize in copying the most advantageous movements for learning a given orthography. On the other hand, Naumann combats the method of copying most strongly. Heyse *et al.* give a system of rules. Harnisch and others make light of rules. Diesterweg *et al.* have many dictation exercises. Bormann and Kehr are hostile to this. All, especially Diesterweg and Kehr, use oral spelling; only Wawrzyk altogether rejects this.

Thus it appears that no writer upon method has succeeded in establishing his opinions and principles sufficiently to win universal recognition. No one has conquered the opinion that he opposed. The reason for all this confusion is easy to see. There are no psychological principles. In recent years the attempt has been made to establish such psychological foundation for orthography.

The Psychology of Spelling. Spelling is primarily a sensori-motor habit acquired like any other habit of this kind by repeated motor reaction to certain sensory stimuli. The habit is a complex one. As Lay points out, the writing movement image of a word is composed of motor images of the separate syllables and letters. The movement images for the separate letters are learned in the first writing instruction. The combination of the writing movement images of the separate letters to the writing movement images of syllables and words is the germ of the whole instruction in orthography, but this is an extremely complicated process. Dozens of muscles must be co-ordinated with definite strength in a definite sequence and with definite accuracy and rapidity. This very complex process goes on unconsciously, of course. The process is similar to that in learning any other motor accomplishment.

In the case of one who has already acquired the habit the psychological process, to describe it briefly, is somewhat as follows: Suppose it is the case of spelling a given name, for example, Worcester. First of all, by memory one recalls the given word. One gives consent to it as a word-to-be-written and forthwith the act of writing the word occurs more or less automatically.

This memory of the word-to-be-written is made up of auditory images of the different sounds composing the words, or of the motor images of the speech movements involved in pronouncing the word, or of the visual images of the different letters, or of the motor images of the hand movements involved in writing the letters, or it may be made up of any two or of all these classes of images.

The modality of the images in any concrete case is determined by two things. First, by the general tendency of the individual's mind, some being ear-minded or having a special tendency to think in auditory images; others being eye-minded or having a special tendency to think in visual images, and still others motor minded, or having a special preference for motor images, or finally, others of a mixed type. Second, the modality of the images is determined by the method by which one learned to spell the given word, being auditory perhaps if one learned by dictation, or visual if one learned by reading, or speech motor if one learned by oral spelling, or hand motor if one learned by copying. In any case the translation into motor terms must occur when one spells the word orally or in writing.

Of course the practical pedagagical problem is to determine by what method one can learn to spell most easily and with the least danger of interference of association, or error. On account of the different mental types the solution of this problem must be largely an individual one. The error of most writers upon spelling in the past has been that each has generalized, perhaps from his own experience, and insisted upon one method as best for all individuals, the result being the conflict of opinion already noted, the teacher who was eye-minded being likely to emphasize the importance of visual images, the one who was ear-minded, the ear and dictation, the motor-minded, pronunciation and copying. But while the solution must be an individual one, it is profitable to inquire what methods in general are likely to be best; and if, as is probable, a method combining all the different images should appear desirable, it is profitable to inquire to what extent the images of these different kinds have a share in the act of spelling under ordinary conditions. Experiments to determine all this were made first by Lay (21).

Experimental Studies. Lay's immediate problem was to determine the value of orthographic exercises, and wherever possible to determine the share which perceptions of hearing, sight, speech movement, and writing movement have in spelling.

Accordingly he tried experiments with dictation, reading, oral spelling, copying. After various considerations and preliminary experiments and modifications he adopted, finally, the following method. Nonsense syllables were used for material. For example, the following:

1. Hearing: Libug, Bollis, Gohlin, Seufil.
2. Hearing with low speaking: Labog, Bulles, Gihlan, Saifol.

3. Hearing with speaking loud: Lubag, Billas, Gahlen, Seiful.
4. Seeing: Ribog, Mellis, Kahlun, Teufar.
5. Seeing with low speaking: Rabig, Meilos, Lihlon, Taitur.
6. Seeing with loud speaking: Rubag, Millus, Kuhlin, Teifor.
7. Oral spelling: Labeg, Bellas, Guhlin, Teufir.
8. Copying: Lobig, Billos, Gehlan, Teifur.

The series of experiments contained eight individual tests. In each test the same number of similar words were used. The series of words in each experiment were several times pronounced by the experimenter, or read by the pupils, or spelled, or copied. The number of repetitions was the same for each series. Then the word series was written from memory on a special sheet, and this given up for correction. In the case of hearing, the words were spelled orally by the experimenter; in seeing, they were written on the blackboard; in the spelling and copying also, the words were placed on the board. Hearing and seeing without speech movement was investigated in the following manner: The pupils, when words were spelled to them, or read, repressed the speech movements in such a way that the jaws firmly closed and the vocal organs remained quiet, a result obtained after some practice. In seeing or hearing with speech movement, they repeated the letters in a whisper or aloud.

The number of repetitions was too great if only very few errors were made; too small if too many errors were made. The fitting number had to be determined first by investigation.

The twenty-four series of experiments with pupils of the people's school included about a hundred class experiments, each experiment embracing about thirty pupils on an average, so that these class experiments equalled 3,000 individual experiments. The results were sufficient to demonstrate that the motor presentations which occur by the activity of the vocal organs and the hands have a predominant share in orthography, and that the ear has far less influence than the eye.

All experiments of the same kind,—hearing, seeing, spelling, copying, resulted without exception in the same way. Of the many experiments only a few gave a contradictory result, and in every case it could be definitely shown that the normal conditions of the experiments had been disturbed by some more or less accidental occurrence.

These experiments were made with children from the first to the sixth school year. With older pupils, who had read and written for ten years, different results perhaps might be expected. Still, from a physiological standpoint, the activity is essentially the same. The same nerve processes are involved, and there should be the same general result. To test this Lay tried the same experiments with classes in the teachers' seminary. 49 class experiments were made. In all 1,800 individual experiments. Although, as might be expected, the number of errors was less, the same general results appeared.

A striking difference between the average results of the experiments for members of the seminary and pupils of the school occurred only in case of oral spelling and copying. The members of the seminary gave greater attention to the oral spelling than to the copying. The latter was done hastily and in shorter time than the spelling. In the case of the pupils the opposite was the case.

Taking the results of both investigations together, the experiments with the pupils and with the members of the seminary, the number of errors for each individual with the different methods was as shown in the following table:

Method tested.	% of errors per pupil.
Hearing, without speech movement, dictation,	3.04
Hearing, speaking low,	2.69
Hearing, with loud speaking,	2.25
Seeing, without speech movement (reading),	1.22
Seeing, speaking low,	1.02
Seeing, speaking loud,	0.95
Spelling (loud),	1.02
Copying (low speaking),	0.54

"If," says Lay (21, p. 96), "we note the increasing number of errors, then the exercises in orthography are to be arranged in the following order, according to their value: Copying, spelling orally, reading aloud, dictation. According to our experiments with pupils in the People's Schools, seeing excels hearing by twice or three times, and copying is twice as valuable as spelling, two or three times as valuable as reading, and six times as valuable as dictation."

From these results, Lay (21, p. 115) argues that the speech apparatus has a much more important part in orthography than the ear; that speaking the letters is better than hearing them. Again, the experiments with hearing without speech movements gave 3.04% of error. The experiments of seeing without speech movements gave only 1.22% of error. Therefore it appears that the visual image is from two to three times better than the sound images; that sight has a greater share in orthography than hearing. Again, the experiments with seeing and speaking low gave 1.02% of error; the experiments in copying 0.54% of error. In these experiments, copying was seeing and speaking low with the addition of writing. The difference between these two numbers, therefore, is due to the motor images in writing. It appears that they decreased the error, as compared with visual images alone, by one-half. The writing movement images thus have a greater share in orthography than the visual images; writing is better than seeing.

Experiments were made, also, to determine the memory for the spelling after intervals of different length. These experiments were based in part upon the investigations of Ebbinghaus, and of Mueller and Schumann, and it appeared that those exercises which gave the best immediate result also gave the best memory for spelling; and Lay makes the general inference that, from the point of view of permanent result, copying, and, in a less degree, reading, and reading with speaking, far surpass oral spelling and dictation.

Further experiments were made to determine the value of printed as compared with script spelling books. These experiments were made in different years, with pupils of different ages, with words of varying difficulty, and in different order, and yet similar results were found in all cases. And they indicated that for practice in orthography script spelling books surpass printed books, that they are about twice as valuable as material for sense perception.

The late Herman Schiller (39), director of the pedagogical seminary at Giessen also attempted to solve the same spelling problem; and at his suggestion Herr Haggenmüller made similar tests with pupils in the third school year of the Vorschule of the gymnasium using German words; and Herr Fuchs with pupils in the lowest class of the Gymnasium (Sexta) using Latin words of unfamiliar meaning. Dr. Schiller's problem was to determine the relative value of the different images in correct spelling. Schiller's results also indicated that sight is a better aid than hearing in spelling, and that in case of both sight and hearing the errors are decreased when these senses are reinforced by speech or writing movements. In general Lay's results are corroborated by Schiller's investigation. The following is the order of value of the methods as fixed by Schiller's tests.

1. Copying with speaking softly.
2. Copying with speaking aloud.
3. Seeing with writing movement.
4. Oral spelling.
5. Seeing with speaking aloud.
6. Seeing with speaking softly.
7. Seeing alone.
8. Hearing with writing movement.
9. Hearing with speaking aloud.
10. Hearing with speaking softly.
11. Hearing alone.

Two Germans, Mally and Ameseder (27), have made a careful technical study and criticism of the results obtained by Lay and Schiller. To quote directly the words of these authors: "If it has been shown that the pupils by the mere hearing of the words have learned least in the way of spelling, that is easily to be understood, but no surprising discovery at all. So much the less, since the words pronounced to the pupils were completely new, and the experimenter established a form of writing for them which varied from the phonetic, although not considerably, still in many cases without the subjects having any experience of this form of writing."

The authors point out further that a universal objection to Lay's experiments in this: what the subjects in the whole experiment had to do was the correct writing down from memory of senseless words which had just been learned. Whoever, therefore, had retained the words themselves well in memory, had undoubtedly accomplished the most difficult and greatest part of the task, and it was hardly so very difficult to arrange the correct, that is the prescribed, writing for the correctly noted word. For the real orthographic errors there remained accordingly little opportunity. And among other criticisms they make the point that the errors in Lay's tests were not comparable to those in orthography. Among other things these writers raise the question in regard to the different results obtained by the different methods of learning tested by Lay.

It is probable that Lay's results must be discounted on account of the sources of error suggested by these writers, and perhaps he attaches too great significance to the differing number of errors by the different variations of method adopted. But in spite of these strictures the main result, namely, the indication of the importance of the motor images in spelling remains, and until further investigations have been made it is advisable, in order to avoid interference of association and error, to depend especially upon the eye and the motor images in learning orthography.

Mr. Smedley (40), director of the department of child study of the Chicago public schools, gives an account of a study of the different kinds of memory among Chicago school children with special reference to spelling. His results are very interesting.

The investigation included tests of immediate sense memory, that is, memory span tests, using digits; tests of auditory memory by reproduction of a series of digits read to the pupils; tests of visual memory consisting of reproduction of a series of digits showed on a card for ⅔ of a second; tests of audio-visual memory, in which the children reproduced a series exposed to view on a card and at the same time repeated aloud by the experimenter; tests of audio-visual-articulatory memory, in which the pupils reproduced a series exposed on a card and read in concert by the pupils; tests of audio-visual-hand-motor memory, where the children wrote the digits on paper while the series was dictated and also exposed on a card, the pupils turning the paper face downward at the close of the dictation and reproducing the series from memory on test paper.

It was found that the different memories cannot be tested as isolated memories. In testing the visual memory, for example, it was noted that many children, in spite of admonitions to the contrary, moved their lips and throat. In the auditory tests, too, short lip movements were noted in some pupils.

As regards the relation of memory to spelling ability, it was found that "while usually the better spellers are possessed of better memory power than are the poor spellers, yet there are bad spellers with a high development of memory. Superior memory may make the acquisition of spelling easy, yet it by no means removes the necessity for some intelligent application on the part of the pupil. While most good spellers tend toward the visual type, still there are both good and bad spellers of each type."

Both these investigators make certain pedagogical suggestions. As a result of his experiments and general study and observation, Lay (21) draws several important, practical inferences, as follows: cultivation of a correct pronunciation is of great importance for learning orthography. As much as possible the sense of a word, pronunciation, reading and writing must be united, and the motor presentation in writing is the determining factor in orthography. Again, the instruction in orthography should give to the pupil the habit of imprinting the orthography of each new word that he meets in his reading upon the mind. Since in the usual spelling lesson much time is wasted, exercises in this should be omitted and, Lay thinks, forbidden, by law, as formerly the spelling method in first instruction in reading was forbidden. Dictation may be used in orthography only as a method of examination, and only sparingly and with discretion even here. The so-called copying method, the writing down of sentences, or the like, from memory, is useful since it is most closely related to the orthographic practice in common life. The knowledge of the derivation of words is advantageous in orthography as a means of fixing the attention on the word forms, although it has no direct value in the acquisition of orthographic skill. The rules also, are not directly of value but are important as a means of fixing the attention and arousing the critical sense for orthographic forms. The choice and division of the material of instruction in orthography should not follow an orthographic system. It should rather, in its general scope and in details, be related most intimately to the words or word sounds employed in the material of instruction in the regular subjects. In other words, instead of having material for the spelling selected according to a special system it should be selected from the words contained in the regular reading lessons, etc. This last point is of great importance, and much time would be saved if this rule were generally followed.

Dr. Smedley (40) takes the genetic point of view and thinks there is a place for oral spelling with young children. On the basis of his investigation he makes the following suggestions:

"The fact that children have the ear memory stronger during the early years suggests at once that the teaching of spelling to the young will be effective if the ear is appealed to; that there is probably a place for oral spelling; that there should be some pronunciation of syllables with the spelling; that the words presented to the child at first should be, as far as possible, phonetic in their spelling leaving the 'more cruel and unusual' forms of English orthography to be learned in later years when the eye memory has become stronger.

"The investigation shows that there is no 'memory period,' no period in early school life when the memory is stronger than it is at any later portion of the child's life, a period especially adapted for learning to spell. While there are no memory stages, there are undoubtedly periods of interest that are especially favorable for the child's learning to spell; times when, through the influence of companions or teachers, the child is aroused from indifference or from a feeling that spelling is a small part of life to a recognition that it is important."

Dr. Smedley (40) concludes that:

"The aim in teaching spelling should be to render words of the most frequent use automatic, to have them so well known that in writing they will flow from the point of the pen, requiring but little thought as to their formation. The spelling of words is rendered automatic through practice in writing them. Though the first grasp of the word may well be made through other combinations of sense memories, yet the final retention of the spelling of most words should be through the audio-visual-hand-motor memory."

One investigator in this country has found results that seem to be in conflict with the inference made by Lay. A few years ago Mr. B. C. Gregory (14), then Supervising Principal of Schools in Trenton, N. J., made an interesting study of the errors made in dictation exercises. He experimented with two classes. The children were of an average age of 11 years in one class and 13 in the other. The misspelled words were marked by the teachers, and the returns from the two classes were studied altogether. In all there were 80 papers. The result very briefly indicated clearly this law, according to Mr. Gregory: "That sound is the dominating element in children's spelling," and he infers from this also that oral spelling should have a large place.

Mr. Gregory's investigation, however, suggestive as it is, as he himself suggests is only "semi-scientific;" conditions were not controlled. The criticism may fairly be made that at best his results demonstrate not the law which he formulates but rather that sound is the dominating element in children's *misspelling;* further, that he does not sufficiently consider that his results may have been largely due to the methods of teaching that had been employed in the case of these children; and, finally, in general that he devotes more attention to the question of treatment of errors in spelling than to the problem of avoiding errors. In this, as in all other forms of motor training, the fundamental rule should be to avoid error rather than to correct it.

The contribution of these experimental studies is not specially remarkable. The chief results would probably have been anticipated by most psychologists. But the investigation is very instructive in the light of the history of methods in spelling. It is noteworthy that, with the exception of a few, notably Comenius, who in his simple, common-sense way had a remarkable faculty for getting on the right side and anticipating the future, most writers have neglected the rôle of motor images in orthography.

As Lay (21) points out, the best writers upon method, Diesterweg, Bormann, Kellmer, Kehr, could arrive at no solid foundation in orthography for the reason that the facts and psychological experiments which physiological psychology affords us to-day were unknown to them. From this it appears that thorough psychological studies are necessary for the school man; that innate skill, many years of practice, and higher scientific training, alone, are not enough.

The main result of these investigations is perhaps to show the importance of the visual and motor images in learning orthography. The problems are by no means all solved, yet these experimental studies point the direction in which *terra firma* lies, and it seems probable that by further experimentation a consensus in regard to certain fundamentals may be attained where hitherto there has been an apparently hopeless conflict of opinion.

So much for Lay and the rest and their heroic experiments. Returning to the general subject, three things are obviously essential in the hygiene of spelling: First, economy; second, avoidance of confusion and interference of association; third, regard for the effect of instruction on the type of mind developed.

1. *Economy*. As everybody knows, a vast deal of time is wasted in the schools in the learning of spelling. As Superintendent Johnson (18) has said:

> "It would not be an impossible task to determine by statistics, approximately, the few hundred, or even thousand words most often written in English. There are defined in the Century Dictionary about two hundred thousand words, but the vast majority of these are seldom, if ever, heard in conversation, and not much oftener seen in print. According to Max Müller, 'A well-educated person, who has been at a Public School in England and at an English University, who reads his Bible and his Shakespeare and all the books in Mudie's Library—that is, nineteen-twentieths of all the books published in England, seldom uses more than three or four thousand words in conversation.' Shakespeare's works contain fifteen thousand different words, Milton used eight thousand, the King James' version of the Old Testament has less than six thousand, and Robinson Crusoe three thousand."

The number of words in the vocabulary of the scholar is probably from 25,000 to 75,000, but, according to Max Müller, he probably uses ordinarily not more than one-fifth or one-third of this number. Prof. Kirkpatrick has estimated the number of words whose meaning is known to him at sight at about 70,000. Prof. Holden has estimated his own vocabulary at somewhat over 33,000 words. Miss Shinn estimated her actual speaking vocabulary at 40,000, and that of her brother, a business man, at 25,000 words. Recent investigations seem to indicate that the vocabulary of primitive peoples and children is considerably greater than has generally been supposed. Dr. Chamberlain (3, p. 162) gives the words in certain Indian Dictionaries as follows: Navaho Indians, 10,000; Dakota, 20,000; Blackfoot, 25,000; Micmac, 30,000; Yahgan, 40,000. But, while as indicated by the studies of Dr. Chamberlain (4) and Mr. Bell, the number of words in a five-year old child's vocabulary. specially if the child comes from an educated family, is probably often greater than the philologists have supposed, and perhaps approximates that of the adult, the vocabulary in daily use, relatively to the total number of words in English, is very small. Prof. Kirkpatrick would put the number of words with which a child of twelve is acquainted at about 7,000 to 10,000. Mr. Johnson, however, estimated that the words used by a class of children below the High School in composition will seldom exceed 6,000. It should be noted, however, that the difficulties of orthography are exhausted in a comparatively small number of common words.

To quote this investigator again:

"The difficulties of English orthography are very largely exhausted in the common words, if not, indeed, in the monosyllables of the language. And the more common the word misspelled, the more doubtful is the literacy of the writer. We attach much more discredit to the misspelling of *does, which, having* and *getting* than to the misspelling of a word not frequently written. It is wrong to assign to children who miss the commonest words, words they will scarcely use in their composition after they have learned to spell them. But a child who understands and has mastered the difficulties of spelling in a vocabulary of three or four thousand of the most common words is a very accurate speller for the words he will ordinarily use in writing; for other words it is very proper that he should consult his dictionary.

Whatever the number of words that should ultimately be learned, it is probable that in most schools altogether too much time is spent in learning them. Dr. Rice (36), on the basis of the study of papers prepared by some 33,000 pupils in nineteen cities in different parts of this country, seems to have demonstrated that beyond a certain maximum each day the time spent in spelling is practically wasted. In the schools of the nineteen cities where his studies were made the time devoted to spelling varied from six or nine to fifty minutes. He found the spelling of children in the schools giving ten minutes to the instruction each day was as good, on the whole, as that of children in the schools giving fifty minutes per day to the subject.

Dr. Rice maintains that generally with fifteen minutes instruction each day children will learn just as much about spelling as if they have more, and hence anything above this limit is time thrown away. The Committee of Fifteen recommend only fifteen minutes for each day for three or four grades; and yet there are not lacking popular writers who are ready to maintain that five times this amount of time should be devoted to the subject. Mrs. Plunkett, writing in the Springfield Republican, illustrates the prevalent ideas, and advocates beginning near the cradle.[1]

"When," she asks, "should these spelling lessons begin? Not later than when a child is five years old. At that age a half-hour lesson in spelling words of three or four letters, and reading short sentences containing the same words, repeated after an interval, will give the child in the 200 days of the school year command of all the words to 'baker' in lesson twenty-six of Webster, and in definitions he should be taught the different meanings of words that sound alike, and also different meanings of words that are spelled the same."

Dr. Cornman (5) has made an extensive investigation of the ability of school children in Philadelphia schools in the subject of spelling, and studied his results with such care that his work deserves special attention. His tests included (1) lists of spontaneously selected words; (2) lists of specially selected words written in vertical columns from the dictation of the teacher; (3) series of short sentences containing selected words written from the dictation of the teacher; (4) spelling papers of the regular term examination set by the superintendent of schools; (5) compositions and other written exercises of the regular schoolroom work.

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[1] Boston Evening Transcript, July 29, 1901.

In two schools, the Northwest and Agnew schools, where there was incidental but no special instruction in spelling, the results at examination after five months were about the same as in the other schools with special instruction.

The averages of the marks of the term examinations of these schools, in comparison with those of other schools, are shown in the following table (5, p. 59):

Northwest and Agnew.		Other Schools.
Grammar grades,	77.3	73.9
Primary grades,	66.2	66.5
All grades,	72.3	68.0

The results seemed to warrant the continuance of the experiment, and consequently during the school years ending June, 1899, and June, 1900, the same conditions were continued and at intervals tests were given. The result of these tests did not show any marked differences between the pupils who had special instruction and those that did not, that is, with the standard of measurement of proficiency employed by Dr. Cornman (composition tests, four column tests, regular term examinations), the pupils spelled about as well one year as another in spite of the omission of the daily instruction in spelling.

As a result, then, of this three years' experiment,—"the conclusion, therefore," as Dr. Cornman argues, "is forced upon us that an influence, the suspension of whose operation for three years is not plainly manifested in such a series of tests as those described above, is of so little importance as to be practically negligible (5, p. 65).

The general result of Dr. Cornman's investigation is in harmony with the results found by Dr. Rice; and it appeared that the improvement in accuracy of spelling was a function of age, grade, and general mental development rather than of the quanity of special training in spelling itself.

Whatever deduction may be made for possible sources of error, and it is probable that they would not greatly modify the results, it is clear that special instruction in spelling has no such result as instruction in other subjects. In few if any other subjects would it be possible to omit all instruction for three years and yet show so little difference between the work of the pupils who had special instruction and those that did not.

The incidental teaching referred to, however, did not mean that spelling was totally neglected. Words likely to be misspelled were placed conspicuously before the pupils when they were engaged in an exercise in which the words were likely to occur. Pupils were taught to consult the dictionary, mistakes in written work were corrected; thus an effort was made to prevent mistakes and to detect and correct them. Cornman's investigation indicates that the average teacher is able to employ such methods without loss of effectiveness; and, on the other hand, the teacher who is unable to do such work well cannot make up for deficiency by any amount of specific drill. To quote the words of Dr. Cornman: "The spelling result is a function of the general pedagogical health of the class, and under normal conditions is a quite constant quantity altogether independent of the method of teaching. In other words, given a class making fair progress in its general work, and its spelling result, as measured by a composition test, may be *predicted* with scientific accuracy, no matter what the daily procedure in regard to the teaching of spelling may have been" (21).

Among his conclusions are the following:

"That the pupils neither gained nor lost appreciably in spelling proficiency;" that "the percentage of correctness of spelling for pupils of any school grade is a fairly constant quantity for that grade;" that "the amount of time devoted to the specific spelling drill bears no discoverable relation to the result;" that "the degree of general mental development, as measured by the school grade of the pupil, is the most important factor contributing to the accuracy of his spelling;" that "the spelling result varies with the variations in the general progress of a class;" that "it is therefore advisable, in view of the economy of time, to rely upon the incidental teaching of spelling to produce a sufficiently high average result."

These results of investigation have been corroborated by the observation of practical teachers (37) who often have benefited overworked pupils by devoting less time to formal drill and by giving more attention to incidental instruction. The English child's burden in orthography seems to be in large part imposed by scholastic convention and tradition rather than due to the inherent difficulties of the subject.

2. *Interference of Association.* It is important in teaching spelling to avoid interference of association. Every error means confusion and interference; and the choice of words, the methods of instruction and length of period should be devised with constant regard to the avoidance of this evil. The English language seems peculiarly liable to cause confusion of association.

English orthography is largely a matter of arbitrary association. The learning of a series of associations involved in acquiring the correct spelling of a given word may be a source of confusion in regard to the spelling of another word apparently similar. These difficulties of English orthography have been frequently pointed out. Mr. McKay (26), superintendent of education for Nova Scotia, has put this graphically as follows:

> "Were our language phonetic in its written form, our children could be taught to read within two or three weeks at the longest, anything about which they could talk intelligently. The most unpleasant and monotonous work of their early years at school now, would then vanish. Every sound having its sign and every sign representing its sound, the task is simply mastering some 40 signs."

Professor Sayce of Oxford (26), also states the difficulties forcibly: "English spelling," he says, "has become a mere series of arbitrary combinations, an embodiment of the wild guesses and etymologies of a pre-scientific age, and the haphazard caprice of ignorant printers. It is good for little else but to disguise our languages, to hinder education and to suggest false analogies." Gladstone is reported to have said that he would go mad if he were a foreigner and had to learn English. And Mr. MacKay quotes Max Müller to the effect, "that a child who believes what he is taught in learning to spell the English language, will hereafter believe anything." In a single word, the spelling of English is a matter of convention, and the conventional associations must be learned by heart by every one who would spell correctly.

These writers, however, go to an extreme and have neglected an important aspect of the psychology of spelling. Against Mr. Gladstone's hypothetical insanity should be placed the testimony of a psychologist who has had actual experience and remarkable success in learning the English language. Apropos of the difficulties of foreigners and proposed reforms Prof. Münsterberg (31) writes:

> "But can we doubt that the alteration of the sixty-two participles works diametrically against his comfort? *Kist* is now to be written like *list*, *prest* like *rest*, *discust* like *disgust*. Even the obscuring words with a double meaning have been increased: *mist* is now *mist* and *missed; past* is now *past* and *passed;* and yet nowhere unity; *wisht* but not *fisht; winkt* but not *linkt*. You could not make it worse for the foreigner; whether pleasant for the English-born, it is not for me to utter an opinion.
>
> "The vowels do not fare better than the consonants. Of course, the English child, who hears the simple sounds of *though* and *through* in the nursery and learns much later how to write them, may be irritated by the complexity. But the foreign schoolboy who sees words of that type has not the slightest difficulty with them. To learn how they are pronounced is very easy because they stick in the imagination just through their curious configuration; no German or French word looks like them—they are taken as interesting freaks of lan-

guage, which are the more impressive on account of their very originality. Just so it was easy for us, in the geography lesson, to read the word 'Worcester.' Such grotesque abnormities are quite handy for the foreigner. Now he is suddenly to see the word *tho* written like *who*, and once again he loses a convenient landmark in the printed sentence. But perhaps he is still more puzzled by *thru* when he is required to speak it like *shoe* and *true*. And with the edict of the Board that *clew* become *clue*, *queue* become *cue*, and *woe* become *wo*, the helps for the eye are gone. You have only to write the three words *to*, *two* and *too* simply *tu* in harmony with *thru* to make the phonetic victory complete. Is this a help to the foreigner who asks nothing but to see with ease the differences between the word?"

The complexity of the process in learning orthography is well illustrated by Lay (21) in his analysis of the act of spelling the word Sahlweide by the different methods. For example, where the teacher emphasizes the ear and the rule the following are the important facts:

The act of orthography in the practically most important cases has for its starting point the concept. Second, the external act, the carrying out of the writing movement for the given script picture is preceded by an inner act, a conflict of motives, a conviction, a consideration, a strife whether the movement for Sal or Saal or Sahl, etc., for Waide, or Weide or Weite, etc., should be carried out. Third, the striving motives are rules, speech-movement-images, sound images, derivation or analogies, Weite from Weit, Saal from Saal (room), and script images. Fourth, the goal of the contest is the motor image. Fifth, those images conquer which appear in the consciousness with the greatest clearness and vividness. Sixth, if a writing movement wins, then this immediately brings up the writing movement without any intervening act, that is, the hand, under certain circumstances also the foot or some other part of the body, moves corresponding to the motor image whether the letter is right or wrong.

In such a complex process interference is liable to occur unless care is taken. In regard to certain words many persons are the victims of chronic interference of association. Examples are the noun *advice* and the verb *advise;* "*principal*," an individual, and "*principle*," a rule of conduct, words with *ie*, *ei*, *or*, *ar*, *er*, *able*, *ible*, *tion*, *sion*, etc.

In some respects prevalent methods might be revised with advantage. The usual method of teaching the spelling of homonyms, for example, is to present them simultaneously. The result is apt to be interference of association. To avoid this they should be taught separately. The very similarities that are supposed to aid the pupil become the source of confusion. In such cases the slight difference, not the general similarity, is the important thing.

This, I take it, was very much what Jean Paul Richter (38) meant when he said: "Resemblance, the rudder of recollection, is the dangerous rock of memory.—Thus, the correct spelling of very similar words, such as *ahnen* (to forbode), *ahnden* (to revenge); *malen* (to paint), *mahlen* (to grind),—is more difficult than that of totally different ones." Applying this principle pedagogically he says: "It is incomprehensible to me how people fancy they can teach children to read or write the letters easily by pointing out their resemblances, and laying before them at once, i, y; c, e; or, in writing, h, k, etc. The very opposite plan ought to be pursued; i should be placed next g, v next z, o next r; the contrast, like light and shadow, make both prominent. The fast-rooted dissimilarities serve at last to hold fast the resemblance that exists among them."

An error of the kind to which teachers seem especially prone prevailed to a large extent in the early part of the 19th century. It was introduced by Zerrenner in 1814 (21). He published lists of sentences containing examples of both correct and incorrect orthography, the latter to be corrected by the pupils. Baumgarten and others systematically carried out this method of teaching spelling by the correction of examples of false orthography, and even Diesterweg in his *Praktisches Uebungsbuch* gives sentences with substantives written with small letters and other errors to be corrected. Such a method puts a premium upon interference of association; but it may be suspected that it is not altogether obsolete to-day. Fitch (11, p. 201) refers to it as not uncommon in England.

It should be noted that spelling cannot be divorced from reading, and whatever tends to make the process of reading easy and to prevent interference of association is likely to be helpful likewise in orthography. Interference of association is often less likely to occur in reactions to two different groups of stimuli, *i. e.*, two different complex situations, than in case of stimuli that represent relatively simple situations. This, again, has been clearly stated by Professor Münsterberg (31, p. 103). The greater the number of stimuli the easier the apperception.

"In just this way the written image may tell us much which seems logically superfluous (since it brings out elements of the word that cannot be pronounced), and which phonetic spelling seeks to abolish. But just as well might we propose to close one eye in reading, for the reason that the nervous processes in the second open eye and in the corresponding half of the brain are a shameful waste of neuron activity. Indeed, we can read 'just as well' with one eye, and hear with one ear; and yet nature knew better; this luxury is economy. Give us as many optical hints for the discrimination of the words as possible, and the more we apparently waste, the more we save. Simplicity and uniformity are the only real waste, because they demand from us an amount of attention which is ruinous in its cumulation; they prehaps reduce the expense for printer's ink, but they increase neurasthenia among the millions of newspaper readers."

3. *Mental Habits developed.* We should judge any method by the habits of mind that it is likely to develop,—whether habits of concentrated attention, orderly association, and healthful mental habits in general, or of desultory attention, confusion of association, and the like.

As regards the type of mind developed by the methods of instruction in orthography, we as yet know relatively little. To what degree one is made eye-minded, ear-minded, or motor-minded by methods of instruction, is still a matter to be determined. If it should appear that methods in orthography have any considerable influence in determining the type of mind, then some, like Professor Patrick, of the University of Iowa, might maintain that it would be wise to use oral spelling to a considerable extent to off-set the tendency in so many subjects to neglect the cultivation of the ear.

Miss Carman (2) in a study of bad spelling finds that those who are chronically poor spellers are also characterized by poor power of observation for printed letters, simple figures, and the like. Her first test was as follows:

The pupils were given a printed page from Appleton's Fourth Reader containing 100 misspelled words. They were asked to mark each misspelled word as quickly as possible.

The time was accurately recorded. The average was:

	Time, seconds.	Words omitted.
Good spellers,	130.1	8.9
Poor spellers,	199.6	28.1

The next test was with two cards containing each ten letters of various sizes, and irregularly placed. These were exposed to them for five seconds, after which they wrote as many of the letters as they could.

The average mistakes were, for the good spellers, 6.6; for the poor ones, 8.2.

"The last test consisted of four cards on which were forms, such as triangles, circles, squares, lines parallel and otherwise, and some figures of undefinable shape. These were also exposed for five seconds, after which they were to be drawn on paper. The average mistakes were: for the good spellers, 11; for the poor ones, 11.6."

"Ability to spell well, therefore," Miss Carman concludes, "probably implies not a *general* habit or power of observation, but a *special* ability to notice small differences in *words*.

"The vision of each of these persons was tested, and showed satisfactorily that it was no factor in the case."

Miss Carman is probably right in this inference, but a number of other factors doubtless contribute to the ability to spell well as suggested by the complexity of the mental process. Whether poor power of observation for small differences in words is the cause of the inability to spell, or whether improper training in spelling is one cause of the lack of observation for small differences, there is at least an interesting correlation here. It is probable, however, that the special training in spelling does not contribute to general power of observation.

The Chicago studies indicate deficiency in spelling is likely to be correlated with sensory defects and inferior memory power, but, nevertheless, they do not demonstrate any necessarily causal relation in this respect. As regards the comparison of good and bad spellers Dr. Smedley (40) reports:

> "Each teacher in the Ogden School furnished the names of the five poorest and the five best spellers of her room. This gave an opportunity to study the characteristics of good and bad spellers. While on the whole the good spellers have decidedly better memory power than the bad spellers, yet there are individuals among the poor spellers who are superior in memory power, and individuals among the best spellers whose memory power is scarcely up to the average of their age. While this native power of sense memory plays an important rôle, it is by no means the only factor in learning to spell.
>
> "It should be added, also, that while the number of sight and hearing defects is greater among the poor spellers, yet there are among the very best spellers pupils with marked sensory defects."

In determining the practical value of pedagogical experiments one must always keep in mind that it is not a question of establishing results on a solid psychological foundation beyond all source of error and possibility of criticism, but rather a question of whether the given results furnish a more trustworthy ground for methods of instruction than mere personal opinion or tradition. The problems of the school are practical problems which must be solved immediately in one way or another without waiting for the ultimate verification of scientific results. The recent investigations by Lay (21), Schmid,[1] Cornman (5) and others show that in elementary instruction there are many important questions which it is impossible to solve by intuition, by the pooling of opinion, or by ordinary observation, but that special experimental investigation is necessary, and this often in order to come to close quarters with the facts.

Conclusion. The chief points that seem to be established by investigation thus far may be put briefly as follows:

1. The larger part of the instruction in spelling should be given incidentally in connection with reading, writing, and other subjects.

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[1] See article by the writer, on Home Study, *Ped. Sem.*, June, 1905, Vol. XII, pp. 213-230.

2. Special instruction in spelling should not be begun before the age of 10 or 12.

3. Not more than fifteen minutes a day for three years should be allotted to special instruction in spelling. This is the amount of time suggested by the Committee of Fifteen and should be considered the maximum.

4. Instruction in spelling should have regard for individual differences of the reproductive imagination.

5. Many different methods may be wisely used, but for the majority of children the methods of writing, and specially of copying seem to be the most efficient, appealing to the visual and hand motor images.

6. The psychology of association and the need of avoiding interference of association should always be regarded; for example, the avoidance of error rather than the correction of error, the automatization of the orthography of simple typical forms, and the isolation of homonyms and the like are advisable.

7. Apparently the drill in spelling develops a special power of observation for small differences in words, a special habit of preperception, but does not have any particular value in general mental training or in developing a general power of observation.

8. The reforms in spelling now advocated seem to be in a large part of the cases desirable, as *honor* for *honour* and *favor* for *favour*, and the like; but in many other cases as *mist* for *missed*, *kist* for *kissed*, and the like, the changes suggested are open to serious question from the point of view of psychology and from regard to the demand of hygiene that interference of association should be avoided.

9. It is likely to be found that such simplifications in orthography, important as many of them are, would amount to relatively little compared with the great possibility of economy to be looked for from improved methods which have regard for the principles of psychology and hygiene.

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FLOWERS.

A POLISH STUDY BY ANGELICA SCYZ.

Translated by Madam Anna Grudzinska.

The study of children's interest in flowers, by Miss Alice Thayer, published in the *Ped. Sem.*, June, 1905, suggested the present study and the same questionnaire was used, that the data might be compared and the following questions investigated:

Do children of different nationalities present different types?

Are there psychical traits common to children of different nationalities, breeding and education?

Are there points which are universally true for every child, American, English, Polish, etc.?

In order to render comparison easy, the outline of Miss Thayer's paper is followed and only the points mentioned by her are touched upon. The material is the answers of 397 Warsaw girls of ages from nine to thirteen years inclusive.

Flowers known to children. The list contains the names of 132 flowers; an average of 11 flowers for each child. The growth of interest is very visible in the answers of the children, each year showing increase in the number known. Children of nine and ten years name upon an average 9 flowers. Children of eleven years, 10 flowers. Children of twelve years, 13; children of thirteen, 15; children of fourteen, 17; children of fifteen, 16-17.

In comparison with American children, Polish children stand somewhat below in the number of flowers mentioned; in quality, they are almost the same.

The ten flowers most frequently named are the rose, by 95.7% of the children; violet, by 78.5%; cornflower, by 67.1%; lily of the valley, by 66.4%; gillyflower, clove pink and pansy, by 60.7%; lily, by 51.4%; forget-me-not, by 44.2%; tulip, by 43.2%; narcissus, by 40.7%.

By comparison it appears that Polish children, like American, name the rose and violet most frequently, but the pansy, although one of the best known, falls from the third to the seventh place.

Favorite flowers. The flowers best liked are in order of preference, the rose, violet, mayflower, lily, gillyflower, forget-me-not, pansy, corn-flower, narcissus and elder. Many children do not give reasons for their liking, such expressions occurring as "I like this flower because I like it," or "because it pleases me." The number of such answers diminishes greatly with increase in age, that is, with growing thought and reflection. Answers without reason given, were for children from nine to ten, 8%; for eleven years, 20%; for twelve years, 6%; for thirteen years, 6.3%; for fourteen years, 0%. The fact that the most imperfect answers came from children of eleven years tends to confirm the observations of many scientific workers that the age of eleven brings a mental arrest, due probably to physical growth and development. The children who give reasons for liking, mention oftenest fragrance and beauty (chiefly beauty of color), 81.2% mentioning fragrance as chief factor in liking. Many children who gave beauty of color as a reason for preference, mentioned several flowers of different colors, thus showing that preference was not restricted to any single color. Those children who showed a preference for one color give as estimated by frequency of mention the following order of colors preferred. White, blue and lilac. Yellow and red have the fewest admirers, and flowers mentioned of these colors are of the most showy and brilliant kinds. These results agree with those of Miss Thayer. Polish children, like American, are not fond of *yellow* flowers. There is, however, a difference in regard to wild flowers, Polish children giving them a decided preference and saying that they like them because they are so modest. These girls seem to be peculiarly sensitive to the charm of simplicity.

Beauty of form appeared to make much less impression than fragrance or beauty of color, only rare flowers, like chrysanthemums or orchids, being admired for their shapeliness.

Other reasons for liking were the beautifying effect upon houses, gardens, etc.; their symbolic meaning, for instance; "I like the lily as the flower of innocence," "the forget-me-not as the flower of remembrance," etc.; their early appearance in spring, *e. g.*, "I like the primrose, as it comes earliest;" lasting qualities, as mignonette, which "remains fresh after other flowers have faded;" personal remembrance, as when a girl of fourteen says she is fond of georginum because it grows on her father's grave; usefulness—though this cause was mentioned by only three among 376 children. One said that she loved the flowers of corn and wheat "because they will make flour;" another child, the rose, "because one can make comfits from it," and a third liked the blossoms of pears and apples best.

Polish children love flowers to such a degree that 19.3%, *i.e.*, nearly one-fifth of the whole number answering, say that they love all flowers without exception. Some, when asked what flowers they did not like, mentioned nettles, thistles and darnels; others give individualistic answers. Often the same flowers are mentioned as liked and disliked, the reason for dislike being a disagreeable odor or the absence of fragrance. The same thing was noticed among American children. Differences in regard to same flower occur, *e. g.*, one girl is fond of heliotrope because of its pleasant odor while another dislikes it "because it smells sickish." Others have acquired a dislike of certain flowers through unpleasant experiences, as nettles or thistles. Some are disliked because of the yellow pollen which sticks to the nose or because they have small flies or bugs on them. A few say that they do not like certain flowers because they are ugly. One girl of thirteen says, "I do not like asters because they look vulgar." Children who mentioned color as a cause of dislike did so only of yellow. Some mentioned the harm done to fields by the darnel and other weeds, as a cause of dislike, and some spoke of sad associations, as with immortelles.

Animism. The question "do flowers feel" was answered by 86.4% of the children in the affirmative and by 21.7% in the negative, the remaining answers being indefinite as "flowers feel but not as we do." Younger children say that flowers do not feel oftener than older ones, showing that the analogy between animals and flowers which the latter have learned in school influences the replies greatly. To some, the sight of damaged flowers is very depressing. 70.4% of the children questioned regret injured and faded flowers and are indignant at other children who "torment them." 38% are indifferent and 31% want "to put the poor plant in water and revive it." 20% compare the lot of flowers with the lot of men. Some of the answers are very interesting, *e. g.*, "Flowers feel because when autumn comes their leaves turn yellow and their heads hang down as if complaining of their sad lot." A girl of thirteen answered the question, "What impression does a broken and faded flower make upon you?" "It makes the impression of a young Polish boy who is forced to leave his beloved country and dies in exile, lonely and forgotten like this flower." Another girl, of fourteen, answered, "A broken flower makes on me the sad impression of a man full of better endeavors and tendencies, who thought he was strong enough to rock the whole earth to its foundations but who meets with brutal reality and dies in inactivity."

In answer to the question, "Do flowers resemble people," 77.3% gave an affirmative and 14.5% a negative answer. Some gave the answer, "I don't know." As to the kind of resemblance, the larger number (185) answer from a nature study point of view and say that they resemble men because they have an organic life, eat, breathe and grow as we do, *i. e.*, are living creatures. Thirteen girls say that flowers have their own language and can talk, six say that, even outwardly, flowers resemble men, *e. g.*, the pansy; seven say that there is a symbolic likeness, *e. g.*, "violets which grow amongst grass resemble people who live in shadow and are humble;" "the tulip grows tall and is like haughty people." A girl of thirteen says, "I love flowers and I love people, so they are like one another." She further explains that both are made by God so they must be alike. Thirty-six girls say that flowers resemble people, without giving a reason. Only 167 girls were asked the question, "Would you like to be a flower or like a flower?" 78 answered affirmatively, 60 negatively, 29 left the question unanswered. Three of those who would like to be a flower, give as a reason the happiness of flowers who live in the fresh air. Here is to be noted the longing for freedom and fresh air peculiar to town children. Twelve would like to be flowers because flowers have such a sweet scent; eighteen, because flowers are beautiful. One would like to be a lily because the Virgin Mary loves lilies; two would like to be shy and innocent as flowers; three would like to be loved by people as flowers are; one would be useful like a rose "because one makes good things of her." Some of the answers show a poetic conception. A girl of thirteen writes, "O how I would wish to be a flower, the rays of the dawn would bathe in the dew drops and gild my robes." Another girl of fifteen says, "I remember when often as a child I dreamed of being a flower. I thought that if I were a flower, I should always be happy, free from trouble and pain. I wanted to be a rose, and be as beautiful as she, or to be a red-clover or a forget-me-not, to be loved as they. But all my thoughts and wishes ended in one chief desire, to be a violet. The violet was in my eyes an ideal and I thought everybody ought to be like it, to have great qualities but not to think about them."

The children who gave negative answers do not possess these poetical tendencies but they seem to comprehend life better. As to the reasons for negative answers, twelve say that a flower can be plucked any minute and die; two say that a flower dies quickly; four, that they do not want to think about impossible things, four, that they do not want to be flowers because God has made the human beings; two think that flowers are useless and human beings can be useful. One sees that these children are satisfied with life and have the instinct of self conservation which characterizes the normal child.

Play. In the play life of children, flowers play a great and diverse rôle. 81.6% of our answers show that flowers are worn and used in play, 14.5% do not play with flowers, and 3.9% give unsatisfactory answers. Most frequently, children like to make wreaths and nosegays, the first being mentioned 143 and the latter 148 times. Other ways of using flowers depend largely upon the education and environment of the children. Older girls love to gather and dry flowers or to draw and paint them. Little girls who like dress and dressing up trim their own heads and frocks and those of their dolls with flowers. Those of a religious tendency adorn altars with them, those of an artistic nature decorate their rooms with them, the sentimental use them in various ways to foretell their future, making use of formulas similar to those in vogue among American children. A girl of thirteen says, "When I was seven I played at mock weddings with the other children; we pinned on veils and dressed in flowers. When I was five, I played that I was going with a company to Aestoktow,[1] and we always took ferns in place of flowers." There seems to be a typical difference between children who do not play with flowers, one class is indifferent to plant life, because their homes and environment are such that they never come in contact with nature, the other is made up of very sensitive children who do not want to play with flowers for fear of harming them. One little girl says that she not only never plays with flowers but that she cannot bear to see them on wires. Many children say that they play with flowers but in such a way as not to harm them.

Superstitions and legends. Many children mention superstitions in connection with flowers; others, legends and traditions.

The commonest superstition is in regard to the mallow which is said to harm the eyes if touched. White flowers, a four-leaved clover and a five-leaved elder bring luck; burned house-leek causes recovery from sickness; smearing a blister with juice of the cactus causes a blister to heal at once; the pollen of the forget-me-not (the peasants call them frogs eyes) falling into the eyes causes one to see all the treasures of the earth; dreaming of a nosegay of flowers is a sign of death in the family.

Legends and tales make strong impressions upon the imaginations of children. They love to tell them and endeavor to explain the origin of flowers, *e. g.*, a girl of eleven, very poor, tells of the dandelion. "There was once a poor orphan, who had no father and mother. She was wandering about in the mountains, praying to God to let her die and be with her parents. God listened to her prayer, made her into a flower and took her soul to heaven." Another legend which comes from the highlanders of the Tatra (the highest Polish mountains) relates that when Christ was born, a highlander journeyed to Bethlehem to see him, but because of the great crowd he could not get near enough to actually see the child, so he bent his stick and leaped through the air high above the heads of the crowd. The virgin was delighted with this feat and gave him a piece of the child's swaddling clothes, which she told him to preserve and scatter among the mountains. The highlander did so and everywhere that the white threads fell, white flowers sprung up.

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[1] A Polish town, with an image of the Virgin Mary, known as a place of miracles. A sort of Lourdes, Mecca and Medina for Roman Catholics.

A well known superstition is in regard to ferns, which are said to bloom once a year, on the 23rd of June, St. John's Eve, at midnight. Whoever finds the fern flower will be happy and find treasures.

Lilies are said to have bloomed for the first time on the grave of a poor but very good orphan, and in the crown of each was written "Ave Maria."

Mayflowers are said to have sprung from the tears of a little girl who went to Heaven, and although it was very pleasant there, she longed for her mother, her home cottage and for the fields and valleys of her native village, and began to cry. Wherever a tear fell, there grew a mayflower.

A girl of fourteen relates the legend of the pansies, which she heard from her nurse. There were once two brothers who loved each other dearly. They had a bad stepmother who had two children. The stepmother, out of envy and badness, killed the two brothers, and that is why the two upper petals of pansies are dark; they mean the two murdered brothers; the three lower petals are lighter, and represent the stepmother and her own children.

The story of Narcissus, who was so vain that he spent all his time in gazing at his image in the water, so that the gods turned him into a flower for punishment, is related by two children.

Conclusions. Summarizing the data above collected leads to the following inferences:

1. Flowers arouse great interest among children. This interest increases with each year, together with the broadening of ideas and growth of the intellect and æsthetic sense. The earliest reasons for liking flowers are color and fragrance, and they furnish a means for training in color discrimination; later come reminiscences, associations and symbolism.

2. The greater number of children see living creatures in flowers and feel sympathetically pain and injury inflicted upon them. This fact offers the pedagogical suggestion of using it as a means of inhibiting the tendency of children to destroy, and of arousing their nobler feelings.

3. The question, "Would you like to be a flower," brought

answers which plainly show the children's love for the sun, fresh air and freedom. Some children envy flowers because they can always live in fresh air, sunshine and freedom; others pity them because they cannot run about. These feelings are more strongly accentuated in those children who have spent their early years in the country and have then moved to the city in order to be educated. Gray town buildings and hard school benches oppress them.

4. The interest in flowers which children develop shows their impressionability in regard to nature. In accordance with this, the education of children should take into account the direction of their attention to the beauties of their nearest surroundings. Vacations spent in the country, in woods and fields, even a small garden behind the house, are factors in education which need to be emphasized.

CONTRIBUTIONS FROM THE CHILD-STUDY DEPARTMENT OF WILSON COLLEGE.

By Amy E. Tanner.

Children's Ideas of Honor.

The following questions were asked 615 boys and girls between the ages of 8 and 18 years, most of them being between 11 and 15 years.[1]

1. Would you tell your mother if you were sent on an errand and stopped to play? (If you were sent on an errand in a hurry and stopped to see a friend would you tell your mother?)

2. If you were asked whether a playmate (a friend) had done something wrong, would you tell on him? Would you lie to protect him?

3. Would you let some one else be punished for what you had done?

4. Would you peek in hide-and-seek? (Would you cheat in a game to win?)

5. Would you take flowers or fruit from a yard without permission?

6. If you found something and knew the owner, would you return it if you disliked him? If you liked him?

7. If your mother gave you 12c. to buy something, and it cost only 10c., would you keep the 2c. without her knowledge?

8. Would you put damaged money into a slot machine? Would you pass it off in a store?

Age seemed to make little difference in the character of the answers, but some differences between the boys and girls appeared, which will be discussed later.

The answers to questions 3 and 7 were mainly negative, 95% saying that they would not allow any one to be punished for what they had done, and 90% saying that they would not hold back any change from their mother.

In answering question 1, 71% of the children say that they would tell their mother, and only 15% that they would not. The rest of the answers are conditional. Sixty-five per cent.

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[1] The words in parentheses indicate the form of the question used with the older children.

would not tell on the playmate, as against 35% who would, but only 17% would go so far as to lie to protect him, as against 71% who would not. Here, as in adult life, the passive virtue of *laissez faire*, combined with the feeling that tattling is most wrong, appears far more common than the aggressive virtue which holds itself responsible for its neighbor's sins.

Only 17% would cheat in a game, as against 71 % who would not, and 13% return conditional answers.

In question 6 we hoped to bring out the effect of personal feeling upon morality. We found that 72% of the children would return the article even if they disliked the owner; while 92% would return it if they liked the owner. That is, personal like or dislike would change the action of 20% of the children.

Differences between the boys and girls show clearly in question 2. Here, 46% of the girls would tell on their playmate, as against 25% of the boys. That is, almost twice as large a number of girls as of boys would tattle. This seems to show either that the girls' consciences are more sensitive than the boys', or that they are lacking in the *esprit de corps* of feeling of loyalty to one another that boys have to so marked a degree.

In the matter of cheating in a game, of taking forbidden flowers, and of using damaged money, the boys are greater sinners, showing, without question, the greater temptations to which they are subjected even so early in life. Twenty-three per cent. of the boys would cheat in a game, as against 12% of the girls; 31% of them would take the flowers or fruit, as against 11% of the girls, making a total of 20% of the whole number who would take it, and 74% who would not.

Forty-five per cent. of the boys would put damaged money into a slot machine, while only 18% of the girls admit that they would, making a total of 30% of the whole number who would do so, and 65% who would not. Still worse, 52% of the boys would try to pass off the money in a store, while only 5% of the girls would, making a total of 26% of all the children who would do so, and 65% who would not.

In the answers to all of these questions, except 3 and 7, it is interesting to notice that the per cent. of self-confessed wrong doers runs between 15% and 30% of the whole number, the average being 20%. In the questions on the College Woman's Code of Honor, the average per cent. was 25%, a little higher. That is, if these figures are representative, we may expect to find about 20% of the children in any school perceptibly lower than the rest in their moral tone, and in their sensitiveness and readiness of response to moral stimuli. In all probability, the per cent. is in reality a little higher, as some children would doubtless write down, not what they feel that they would do, but what they know that people would expect them to do.

Now, the interesting question to the teacher is, what the child really thinks of the moral character of these acts which he says he does?

We can hardly imagine that he thinks them very wrong, or he would not own to doing them, even though sheltered by an anonymous paper. On the other hand, it is hard to see how he can avoid knowing that most children and grown people condemn them, or how he can avoid feeling some shame at doing them, or at least, that desire to keep them secret, which is the beginning of shame. Doubtless, a few of such children are desirous of the reputation of the "bold, bad villain," but surely not 20% of them are.

It seems more probable, and certain experiences of the writer within the last few years bear out this idea, that while such a child is conscious, in a vague way, that others think such acts wrong, he has never had it brought home to him that others despise him for doing such acts—that an inseparable accompaniment of doing such acts is contempt and distrust from his companions. Conscience, as Baldwin says, is eminently a social thing, and hurts one much more after the sin has been discovered than before. I would modify this a little, and say that it does not hurt to have the sin discovered unless it is also condemned and brings in its train some sort of social ostracism. In all probability, most of the 20% of children who do these wrong acts look upon the differences between them and other children as mere differences of taste, such as liking different stories, or different styles of trousers or hats. If these children were only made to feel the scorn of their associates, their moral reformation would be ludicrously sudden, and probably would be genuine, even though ludicrous.

CHILDREN'S RELIGIOUS IDEAS.

The following questions, which follow in the main some made out by Earl Barnes, were asked of 315 children between the ages of eight and fifteen years.

1. God: Where is he? What does he do? Why do you love him? Are you afraid of him? Why?

2. Christ: Who is he? Where is he? Do you love him? Why? How does he help us now?

3. Heaven: Where is it? What must people do to go there? What do they do there?

4. Hell: What must a person do to go there? What is it like?

5. Prayer: Why do people pray? Do they get what they pray for?

One question was also asked on the soul, but the children were evidently at a loss for an answer. Most of them professed ignorance except that they were sure that they possessed a soul.

Most of the children who answered the questions were of Pennsylvania Dutch origin, and with few exceptions were Protestant, the largest denominations being the United Brethren, Lutheran, Methodist, and Presbyterian. The character of the answers does not seem to depend upon the sect to which the child belongs, nor upon the age, except in some instances which will be noted later.

In answering the question, "Where is God?" 85% of the children give the answer to be expected—that he is in Heaven; 8% say that he is everywhere, and 5% admit ignorance.

Their ideas of what God does are much vaguer, 17% saying that he helps us, and 12% that he teaches us to be good. But 41% confess that they do not know, the boys being greatly in the majority. This difference between the boys and girls appears in all the tables, and seems to agree with the observations made on the first questions of children, which show that girls ask more questions about religious matters than do boys. Perhaps this question was too vague to get good answers, and yet, if the children had had any specific teaching along this line, would they not have been able to give some answer?

Fifty per cent. of the children love God because he is good to us, and 17% love him because he loves us. About the same number are not afraid of him, but 15% do fear him, 5% of them being unable to give any reason for their fear, and the others giving scattering answers.

The answers to questions 3 and 4 are also along the stereotyped line. Heaven is placed above us by 69%; according to 22% people who go there pray and sing; and in order to go there 71% say that they must be good. On the other hand, 19% say that they do not know where Heaven is; 8% that they do not know what people must do to go there; and 42% that they do not know what people do there.

Contrariwise, in order to get to hell, 45% say that people must be bad; 10% that they must displease God; and 15%, that they must swear. Thirty-four per cent. believe that hell is like a fire, and this idea becomes more common with these children as the age increases. Nine per cent. define hell as a place where there is no peace; and 13%, the younger children chiefly, say that it is an ugly place. Eleven per cent. who must, one would think, believe in predestination to damnation, hold the gloomy view that one need only die in order to go to hell.

In answering the question as to why people pray, 22% gave as the reason, to go to Heaven; 10%, to be good; and 15%, because they love God or Christ. Sixty-nine per cent. say that people get what they pray for; 14%, that they sometimes get it. Only 4% think that prayer is not answered.

These answers are all much what we should expect from children brought up in homes where the more conservative teachings are in the predominance.

The answers to question 2 are, however, rather surprising just on this account. They are remarkable for the ignorance which they show of Christ and his relation to men, as taught by the Christian church. Christ is the central figure in Christianity, and his works and mission are what distinguish Christianity from other religions. Yet of these children, practically all of whom were brought up in "Christian Homes," 30% say that they do not know who Christ is; 41% do not know why he came to earth; and 38% do not know how he helps us now. This ignorance diminishes as the children get older, while definite answers increase.

Of the reasons given for loving Christ, 25% refer to his being good to us, 18% to his loving us, and 8% to his dying to save us, making in all 51% into which personal gratitude in one form or another enters.

In answering the question why Christ came to earth, 31% say that he came to save sinners; 10%, to die for us; and 9% to save us, making a total of 50% who seem to understand to some degree Christ's mission as taught by the church. The answers to how Christ helps us now, are more scattering,—14%, principally younger children, say that he makes things grow; and 7%, that he gives us food; 13% say that he helps us in prayer; 17%, that he helps us to be good; and 9%, that he prays for us, all of these answers increasing with the age of the children.

As the papers reflect faithfully the teaching of the children on such points as God's nature and relation to men, Heaven and Hell, and prayer, they doubtless reflect also the teaching or lack of teaching regarding Christ. That is, one would conclude that the Sunday Schools and churches which these children attend, and the religious teaching which they get at home, lay relatively little stress upon Christ's life and work. Is this a merely local thing, or is it characteristic of these denominations everywhere?

LITERATURE.

Reports on Children under Five Years of Age in Public Elementary Schools, by Women Inspectors. Great Britain Board of Education. Presented to both Houses of Parliament by command of His Majesty. Wyman and Sons, Ltd., 110 Fetter Lane, E. C. London, 1905. pp. 155.

This report of five women inspectors, appointed by the British Board of Education, is one of the most drastic criticisms of school management ever published. So extreme are some of the statements made by one of the five inspectors that her report is published with a disclaimer by the Board of Education as to the accuracy of certain portions of it. The presentation of this report was followed by the immediate retirement of the author from service.

Though there is a considerable variation in the reports, due to the fact that their work covered different sections of the country, there is also a remarkable uniformity on some points, and the five reports are unanimous in recommending a decided change in the management of English infant schools.

The defects of the present system reported are the tendency to treat children from three to five years old, exactly like those who have entered the regular standards (grades), to prescribe the same hours, length of recitation and mental pabulum, in smaller doses, as for the older children. This is not true of the best infant schools, and better conditions prevail in the country than in large cities. Under the worst conditions, little children of from three to five have forty minute recitations, are compelled to stand or sit still (movement being an infringement of discipline) during the greater part of the five or five and one-half hours in school, in crowded, ill ventilated, poorly lighted, and insufficiently heated rooms, many of which never receive the direct sunlight. The seats are frequently not adapted to the size of the child and the system of galleries in use for infant rooms, *i. e.*, raised platforms in ascending rows in which the seats are placed, frequently cause dangerous falls and provide no free floor space for exercise. Few of the schools have any sleeping accommodations, though naps are a recognized hygienic necessity for children of three and four years. The children fall asleep in their seats with heads bent forward on desks and the spine bent, and often twisted. In some classes two and three arithmetic lessons are given daily, usually under different names, as number work, notation, tables, etc. The method of instruction is incessant repetition, sometimes 20 times for a single word in reading or a statement in number. The teachers can scarcely be considered responsible for this as it is probably the only method possible under the circumstances, since the classes are judged by results, *i. e.*, the ability of the children to read, write and do sums when they enter the first standard, at six years. Medical inspection is insufficient, and as teachers' salaries are, to some extent, dependent upon the number of children registered in the average attendance, there is naturally a tendency to less vigilance in excluding children whose presence may endanger the health of others, or in passing on those who ought to be promoted, whenever there is danger of the average attendance sinking to the point which would place the class in a lower grade and lessen the salary. The discipline is military rather than maternal, and "being good" means making no noise, standing or sitting still, often with folded arms or hands placed on top of head, both positions of strain for children under five years.

Under the best conditions, which occur chiefly in country schools, there is less crowding, hygienic conditions are fairly good, and the children have a special teacher, who does not also teach in the standards, as is frequently the case in cities; the infant classes have their own time table, and there is more freedom and less drill work. Sewing and needle threading as an occupation (a prolific source of eye defects later), are much reduced, and fewer children of three and four are in attendance. Some of the reports state that many of the teachers are so kind, patient and good with the children that it renders the task of criticising their work peculiarly hard. Many of them realize that things are wrong but are helpless to remedy them as their positions depend upon carrying out the requirements of the board and producing results satisfactory to the inspectors, who are men, women being regularly employed only in subordinate positions.

As to the results of the system, the five reports are fairly agreed. Those children who enter school at three and four years have less power of observation and less originality at the age of six or seven than those entering school at that age. When promoted to the first standard, they are easier to discipline and recite better than the children entering school for the first time, but this difference, by the end of the year has either vanished or the balance stands in favor of the children entering late. The children who enter early from poor homes improve in language, manners and morals, those from good homes deteriorate. Fewer children from good homes are entered, or if entered, are afterwards removed to private schools. The causes for early entrance are most frequently, the laziness and selfishness of the mothers, though in some cases, the cause is the necessity for the mother to go out to work. Children from poor homes usually improve in health, due probably to more regular life, and the fact that in some of the schools free lunches, and sometimes dinners are provided. On the other hand, children from good homes usually deteriorate in health.

Criticisms and suggestions offered by the various inspectors for the consideration of the Board of Education are as follows. Needlework and knitting should not be taught to children under six since such work is liable to result in injury to the eyes. Fine materials and small implements should be forbidden. Exhibition of infants' work should be abolished. The hours, 9-12 and 1.30-4 are too long unless sleeping accommodations are provided. The difficulty of keeping cots in hygienic condition is recognized, and twine hammocks are suggested as easiest to keep free from dirt and vermin.

Classes are everywhere too large. Heating, lighting and ventilation are often insufficient. Formal instruction is not recommended for children under five. "Toilet rooms are insufficient in number, dark and unsanitary in arrangement and totally unsuitable for teaching habits of decency and cleanliness." The discipline is unsuited to little children "and is invariably interpreted to mean 'sit up,' 'sit still,' 'fold arms back' (or front). To be eager and alert and want to answer out of turn is to be naughty." One inspector, not a woman, remarked to teacher that the discipline in her class would have been quite perfect but that one or two children moved (poor babies!). In country neighborhoods it would be better if children under five were refused admission to school. In cities, especially in very poor districts, no formal instruction should be given and better playgrounds and open space in doors provided. In suitable weather at least one-half of school hours should be spent out of doors. Teachers' salaries should not be dependent upon the number of children in average attendance.

The substitution of National Nurseries in place of schools for formal instruction is suggested. These should offer opportunies for free and directed play and their object should be the self-development and care of the child. The employment of bright young girls who are fond of children and have motherly instincts instead of certificated teachers trained for the standards is recommended, who having promotion in view, naturally employ the methods in which they have been trained, but which though suitable for older children are positively injurious to babies. The chief aim of these baby minders should be ministry and service to the children rather than the teaching of them. Employment of nurses to look after the health of the children is also suggested. Painful as are the facts recorded in this report, it is, nevertheless, a record of work well done and a promise of better things toward which many steps have already been taken.

Archivos de Pedagogia y ciencias afines. Organo de la seccion Pedagogica. Ano 1, No. 1. Junio, 1906. pp. 153. Director, Victor Mercante.

The Universidad Nacional de la Plata has just forwarded to the University the first number of a new pedagogical journal, which, if the standard set by this first issue is maintained, will be an important addition to periodical literature in this department. The contents of the present number are as follows: Universidad Nacional de la Plata—its organization; personal directors and teaching force; plan of study and programme of the pedagogical section, which last compares favorably with those of our best universities; an anthropological study by V. Mercante entitled Craniometric investigations in the national schools of la Plata; a study of the intensity of perceptions in children by Rodolfo Senet; an article on the morphology of the nerve cell by Ramon y Cajal; the psychology of stimulus by Jose Ingegnieros; an article on University promotion and examinations; book reviews and miscellaneous notes on topics of educational interest.

Physical Education, by DUDLEY A. SARGENT, Director of the Hemenway Gymnasium, Harvard University. Ginn and Co., Boston, 1906. pp. 311.

This volume is composed of papers and essays which the author has written from time to time during the past twenty-five years. Some of these have been previously published as magazine articles or were addresses delivered before various educational and medical associations, while others are here printed for the first time. Though each chapter forms a complete whole in itself they are so connected as to give unity to the book. Subjects treated are Physical Training from the historical view-point, The Physical State of the American People, Physical Exercise and Longevity, The Individual System of Physical Training, The Regulation and Management of College Athletics, Athletics in the Secondary Schools, Military Drill in the Public Schools, Physical culture in Elementary Schools, Physical Training in the School and College Curriculum, and Ideals in Physical Education. Some interesting figures are given, showing the relative status of athletics and general physical training in some of our largest universities. Yale and Harvard, together, expend annually one hundred thousand dollars, and one hundred persons expend a large amount of time and energy in training about two hundred young men, who were perhaps in least need of such training, to feats of skill, strength and endurance. At Harvard the expenses, including salaries, of the gymnasium, which is used by about two thousand students, is less than twelve thousand dollars annually, and three men are employed to look after the physical instruction of students. That the money thus expended comes from different sources, does not affect the facts as to what is being done for the physical training of our college students, and the number benefitted by the two agencies. Representing as it does, the results of years of experiment and study by one of our best authorities in physical education, Dr. Sargent's book will be read with interest by every one interested in the broader aspects of education.

Folk Tales from Tibet; with illustrations by a Tibetan artist, and some verses from Tibetan love songs. Collected and translated by Capt. W. F. O'Connor, C. I. E., Secretary and interpreter of the Mission to Lhasa, 1904. Hurst and Blackett, Ltd., London, 1906. pp. 176.

This is a unique collection, made during Capt. O'Connor's two years' stay in Tibet. The stories were obtained from village headmen, monks, servants, local government officials, peasants and many others. They were written down just as heard and then translated from the Tibetan idiom to ours. The present volume does not include the entire collection made by Capt. O'Connor who encountered many difficulties in his work. Many of the best known tales he found to have been imported bodily from India or China and possessing little local coloring. These as well as some of scientific interest but unsuitable in a book designed for general circulation, and some which required further elucidation and revision have been excluded. Twenty-two tales are given, of which fourteen are about animals, the hare being a conspicuous figure in several.

Tales of Passed Times, told by MASTER CHARLES PERRAULT, with twelve illustrations by Charles Robinson. J. M. Dent and Co., London, 1900. pp. 192.

It is to Perrault that we are indebted for many of our good old-fashioned fairy tales, and the old favorites of childhood Cinderella, Red Riding Hood, Blue Beard, etc., are here presented in a dainty little octavo volume. To Perrault's collection have been added Beauty and the Beast, and two tales by Mme. la Comtesse d'Aulnoy.

Notes on Education for Mothers and Teachers, by CAROLINE SOUTHWOOD HILL. Seely & Co., Ltd., London, 1906. pp. 122.

These essays are the results of the observations and thought of a mother who had much experience with children. They are not all of recent date, and the author, who was one of the first to apply the Pestalozzian principles of education in England, has simply recorded her own experiences in the training and management of children. Although the book sets forth no new principles, like all records founded in actual experience, it has a message for those interested in the problems of child life and education.

Elementary Pedagogy, by LEVI SEELEY, Ph. D. Hinds, Noble and Eldridge, New York, 1906. pp. 337.

This, as the title states, is an elementary text-book designed to meet the needs of students in normal schools. Each chapter is prefaced by a few references for collateral reading in the topics discussed and these seem to have been selected with a view to limiting them to the literature usually accessible to students in normal schools and young teachers. For this reason, probably, the references are few in number, and the same books are used as references on different topics. The book is clearly and simply written, and there is a summary at the end of each chapter to aid the pupil in memorizing the principles therein discussed. As examining boards and school superintendents generally require candidates for certificates to pass an examination in pedagogy, the present volume seems well adapted to aid them in successfully meeting the requirement.

The Renewal of Life: How and When to Tell the Story to the Young, by MARGARET WARNER MORLEY. A. C. McClurg & Co., Chicago, 1906. pp. 200.

This little book on a vital subject, in which the importance of right instruction is coming to be recognized as fundamental in moral training, will be welcomed by all those familiar with Miss Morley's earlier publications. Like all of the author's work, it contains much that is suggestive and helpful, but it is on the whole somewhat disappointing because of its lack of definiteness. It deals with nature study as a general means of instruction rather than with the specific problems and difficulties which confront parents and teachers, many of whom will be likely to think that the promise of the title has been but vaguely fulfilled.

THEODATE L. SMITH.

Savage Childhood, a Study of Kaffir Children. By DUDLEY KIDD. Adam & Charles Black, London, 1906. pp. 314.

The author has spent many years in Africa and attempts here to supply what does not exist, namely, a work on the childhood of the native races of South Africa. The Kaffir children, very many of whom are photographed here, are attractive and very lively, and, it would seem, have quite as many games and recreations as are found among children of so called civilized races. The author follows the course of life, describing first birth and infancy, then the dawn of self-consciousness, the inter-dentition period, the development of the faculties, play, work and its side issues, stories, even parties, etc. Many stories are given. As a whole, the work marks a very valuable addition to our knowledge of childhood.

Spinning Tops, by JOHN PERRY. (The Romance of Science Series.) Society for Promoting Christian Knowledge. London, 1901. pp. 136.

It is high time a simple elementary book was written on the top, which is really an open sesame to many of the fundamental questions of physics, and here we have it in brief compass with fifty-eight illustrations, and all told in plain language with little mathematics.

Studies in the Psychology of Sex. by HAVELOCK ELLIS. F. A. Davis Co., Philadelphia, 1906. pp. 285.

The author here continues these important studies in a fifth volume in its series, dealing with various fetichisms, scatologic symbolisms, exhibitionists, demusense and the psychic state of pregnancy. The volume is very rich in details and still further brings the scope of and increases our sense of the importance for life of a knowledge of this subject, despite the repellant features of many of its morbid phases.

Wir jungen Männer, das sexuelle Problem des gebildeten jungen Mannes vor der Ehe, Reinheit, Kraft und Frauenliebe. von HANS WEGENER. Karl Robert Langewiesche, Leipzig, 1906. pp. 216.

The writer here speaks rather plainly upon the relation of young men to the problem of sex. He discusses the present conceptions of honor among young men, then draws the subject from the standpoint of health and, finally, of succeeding generations and of the nation. He finds most current evils due to the disproportion between play and work. This, he believes, is working very subtle evils in the young of both sexes, and believes that radical changes, not only of theory but of life, are necessary in order to combat the growing dangers that arise in this field.

La crise de l'enseignement secondaire, l'education et le droit social, par M. A. LESORJU. A. Rey & Cie., Lyon, 1906. pp. 419.

The crisis here described is that of the laicization of school work in France, where this crisis is much more acute than in England. The author first dwells on the Chaumie Law and the causes that led up to it. It had been found that philosophy had, to some extent, before emancipated the minds of youth from religious restraint and that classical studies could not be relied upon to make good this loss. Hence, it was necessary to develop special courses in sociology, and especially in good citizenship, with manifold illustrations from French literature and history, with the purpose of impressing upon the rising generation their responsibilities to the state and to society.

Manual of Physical Geography, by C. T. WRIGHT. Ginn & Co., Boston, 1906. pp. 178.

The author boldly claims that his subject gives the student a broader outlook in the sciences included in the curriculum, and that it ought to be the culmination of the nature study of the grammar school. Not only geography but history and sociology pay their tribute to it. The first number of his work is called the library manual and discusses climate, rivers, minerals, water, plants, etc., while the second is a field and laboratory manual telling what magnitudes lie in magnetism, rainfall, icebergs and coal, irrigation and many other topics. Some 150 pages at the end are reserved blank for students upon the work of the text.

An Advanced History of Great Britain, from the earliest times to the death of Queen Victoria, by T. F. TOUT. (Longsman's Historical Series for Schools.) Longmans, Green & Co., New York, 1906. pp. 755.

This work, in its size and its methods, suggests Gardiner's admirable school text-book of English history, but is perhaps a little fuller on public events and also of private life. This is designed as a third and final book, as it is the largest, covering English history. It certainly involves not only more, but harder work than the current text-books for use of children in the same grade in American schools.

Good Health, by FRANCES GULICK JEWETT. (The Gulick Hygiene Series.) Book 1. Ginn & Co., Boston, 1906. pp. 172.

This is a new and unique idea, and the further publications in this series will be awaited with interest. As personal hygiene is coming to be more and more regarded as the basis of morals, books like this will have an added value. The topics treated here are fresh air, microbes, dust, sleeping, eyesight, the hair, skin, teeth, the hygiene of reading, etc. The numerous illustrations add much to its value.

In Quest of Light, by GOLDWIN SMITH. The Macmillan Co., New York, 1906. pp. 177.

The writer here prints some thirty-seven short papers on very many subjects which he has written within the last few years, most of which appeared loosely in letters to the New York Sun. Some of these great themes are confessedly treated with great brevity and with corresponding inadequacy.

A Text-book in General Zoölogy, by HENRY R. LINVILLE and HENRY A. KELLEY. Ginn & Co., Boston, 1906. pp. 462.

This work treats the phyla in a descending order from below the forces and in an ascending one above them to man, which is preferred to a complete evolutionary order. The theory of the writer is that no recitation should be held until after laboratory work has supplemented that with the book. Psychological principles are reserved for a late chapter and œcolology has considerable attention. A good deal of effort has been given to obtain original illustrations, of which there are quite an unusual number.

It is no easy matter to attempt to write a text-book in Zoölogy now, but these authors have very happily followed a method too much out of vogue at present, namely, that of proceeding up the scale of animal existence. Hence, they give a chapter to such subjects as the locust, May flies, bugs, beetles, butterflies, moths, flies, ants, bees, wasps, spiders, the crayfish, the earth worm, star-fish, the amoeba, the bull-frog, lizards, pigeons, and other animals, describing somewhat of their anatomy but omitting their mode of life.

General History, by PHILIP VAN NESS MYERS. Ginn & Co., Boston, 1906. pp. 779.

This voluminous writer has here brought together his ancient and modern history into one volume, with new maps, references and a new text, coming down to 1894. He has certainly chance for selecting interesting facts and cuts. The maps, too, are models of clearness.

A Frontier Town and other Essays, by HENRY CABOT LODGE. Charles Scribner's Sons, New York, 1906. pp. 274.

Senator Lodge here prints a number of addresses which he has given within the last few years on important occasions. They are as follows: A Frontier Town, Good Citizenship, The Senate of the United States, History, Samuel Adams, Theodore Roosevelt, Senator Hoar, American History, Certain Principles of Town Government, Franklin, United States at Algeciras.

Romances of Fanland or Stories told to Violett, by MRS. MIGNONETTE VIOLETT WHELEN. Griffith & Rowland Press, Philadelphia, 1906. pp. 164.

This book is made up of little skits on the story of the Spanish fan, the feather fan, the lace, painted, little and Chinese fans. They are stories told to the author's daughter to while away the tedious hours of railway travel and beguile into the realm of make believe. They are dedicated to the daughter Violett, whose picture makes up the frontispiece.

A Plan for the Revival of Reading. With a plan of campaign. By W. E. STEAD. Stead's Publishing House, London, Sept., 1906. pp. 99.

This vigorous writer thinks it high time that there should be a revival of interest in reading and pleads for a library in every home and school, and plans a campaign, describes books that help workmen to rise and tells how we come to love books.

The Revival of Aristocracy, by OSCAR LEVY. Trans. by L. A. Magnus. London, 1906. pp. 119-

This work has made considerable stir in England on account of its attempts to outdo Carlyle in pleading for a new aristocracy based on evolution which disposes of the vulgar herd, and his chapters are Napoleonic. He has certainly a vigorous style and even rises to great force and vigor of expression in his plea for all those who feel themselves truly great to let themselves go, and in his condemnation of our paltering charity that seeks to serve the weak.

Principles of Botany, by JOSEPH YOUNG BERGEN and BRADLEY M. DAVIS. Ginn & Co., Boston, 1906. pp. 555.

Bergen's widely used Foundations of Botany constitutes the basis of this book. This, the present work, supplies a consecutive series of studies of representative spore plants, so treated as to outline the evolutionary history of the plant world. Technology is reduced and the economic side kept in view. There are three parts, the first dealing with structure and physiology of seed plants, by Bergen; the second, dealing with morphology, evolution and classification of plants, and showing relations of descent; and the third, œcology. The whole constitutes an elaborate and valuable work.

Applied Sociology, by LESTER F. WARD. Treatise on the Conscious Improvement of Society by Society. Ginn & Co., Boston, 1906. pp. 384.

The writer has discussed the relations of the power and the efficacy of effort and purpose of sociology, *Weltschmers*, justice, and social welfare, freedom and any class worthy for truth and error, social appropriations and egalitarianism, and a second part has labeled movement and treats such subjects as civilization, resources of society, and the third part is on improvement. This is certainly a most modern treatise of the author and seems to show more consideration of the opinions of others than his works have previously, although he still observes the old propensity to use ponderous terms.

Among Country Schools, by O. J. KERN. Ginn & Co., Boston, 1906. pp. 366.

This interesting booklet describes the country life of a country child, school gardening, indoor art, and school libraries, training of teachers, and manual training. There are 154 illustrations. The work is thoroughly timely and sensible.

Congress of Arts and Sciences. Universal Extension, St. Louis, 1904. *Medicine and Technology*. Vol. V and VI. H. *J*. ROGERS. Houghton, Mifflin & Co., Boston. pp. 738.

These volumes fully sustain the high character of their predecessors. It is, however, a matter of regret that some of the most important papers read at the congress are missing. This is especially true of the foreign contributors to the congress. The reader is always impressed by the arbitrary division of subject which makes it rather difficult to find many of the papers. Such a congress was hardly a place for the universal classifier to be let loose upon the world.

Educational Systems, by GRAHAM BALFOUR. Clarendon Press, Oxford, 1903. pp. 307.

Teachers will welcome this new and revised edition of the author's social work which is the only open sesame to the mysteries of educational organism in Great Britain. In preparing it, the author is impressed by the difficulty of treating England, Ireland, Scotland in three water-tight compartments and also in treating primary, secondary and higher education as separate, as the plan requires him to do. The comprehensiveness of the work is admirable.

The Culture of the Soul among Western Natives, by P. RÁMANÁTHAN. G. P. Putnam's Sons, New York & London, 1906. p 262.

This Oriental pundit is the Solicitor General of Ceylon, who was invited by the members of the Monsalvat school of comparative religion to come to that country and by Myron H. Phelps to come here and lecture. He travelled many months lecturing upon faith, Scripture, the key of knowledge, the law and the prophets, and on Jesus. While his talks were popular they were of unusual interest, and will be welcomed by all students of religious psychology.

The Moral Damage of War, by WALTER WALSH. Ginn & Co., Boston, 1906. pp. 462.

This work is dedicated to the 13th Peace Congress held in Boston 1904 and to the American people. The chapters describe the damage of war to the nation, child, soldier, population, preacher, missionary, trader, citizen. The interesting part of the book consists of the notes and references to literature. In general, we may say that this is a most comprehensive statement of the case of which we have no knowledge.

London County Council Punishment Book. To our office comes a very interesting punishment book of the London County Council. On the first page are regulations as to corporal punishment, namely that it must be reduced to a minimum and tried after all other methods have failed. When the cane authorized by the Council must be used and then the punishment blanks of the book must be used and filled out. The punishment book is to be preserved five years after being filled. Punishments must not be cruel. Every mode of punishment by blows of the hands, striking, shaking, etc., is forbidden. The entries to be filled are date, name of the child, and mode of punishment. Signature of the teacher who inflicted the punishment, and initials of the head teacher. We have also received a cane used for this purpose. It is between 28 and 29 inches long, and nearly one-half inch in diameter. Girls must be punished by women, and the blow must be laid on the hand transversely just outside the ball of the thumb. The writer talked with a number of principals and lady teachers, and every one was most hearty in commending it as a last resort and expressed little sympathy with the sentimental American teachers who made this impossible. It is almost always done with the hearty cooperation of the parents, and the writer has never known this to be lacking.

Publications of Clark University. List of books and pictures in the Clark Memorial Collection. Worcester, Mass., July, 1906. Vol. II, No. I. pp. 74.

The Point of View in History, by WILLIAM E. FOSTER. Reprinted from the Proceedings of the American Antiquarian Society. Worcester, 1906. pp. 74.

A Trip to Easter Island. (A Speck on the Ocean). By VICTOR STRAUSS FRANK. (Part I. Reprinted from Journal of the Franklin Institute, September, 1906.) pp. 179-199.

Heroes of European History, by LOUISE CREIGHTON. Longmans, Green & Co., New York, 1906. pp. 196.

An Anglo-American Alliance, by GREGORY CASPARIAN. Mayflower Presses, New York, 1906. pp. 144.

The Child First. A Report of the Juvenile Court of Salt Lake City, Utah. Published by The Juvenile Court Commission. pp. 78.

Laboratory Course in Physics, by R. A. MILLIKIN and H. G. GALE. Ginn & Co., Boston, 1906. pp. 134.

Childhood, by ALICE MCCLELLAN BIRNEY (MRS. THEODORE W. BIRNEY), with an introduction by G. Stanley Hall. F. A. Stokes Co., New York, 1905. pp. 7 and 254.

National Education Association. Report of the Committee on Salaries and Tenure and Pensions of Public School Teachers in the United States, July, 1905. Published by the Association. pp. 466.

Antiquities of the Jemez Plateau, New Mexico, by EDGAR L. HEWETT. Smithsonian Institution. Bureau of American Ethnology, Bull. 32. Wash., 1906. pp. 53+.

The Value of Humanistic, particularly Classical Studies, as a preparation for the study of Medicine and of Engineering from the point of view of the Professions. Proceedings of the Classical Convention held at Ann Arbor, Mich., March 29, 1906. Victor C. Vaughan, ed. pp. 289-414.

Asser's Life of King Alfred, by ALBERT S. Cook. Ginn & Co., Boston, 1906. pp. 83.

Selections from the Greek Lyric Poets, by HENRY M. TYLER. Ginn & Co., Boston, 1906. pp. 191.

The Reform of the Arts Curriculum of the Scottish Universities, by ALEXANDER DARROCH, M. A. Edinburgh, 1905. pp. 31.

The Physical Basis of Education. Eight lectures, by JOHN M. TYLER, of Amherst College. 20th Century University Club Educ. Comm. 9th Session of University Lectures, 1905-'06.

First Year German, by WILLIAM C. COLLAR. Ginn & Co., Boston. 1905. pp. 336.

Benjamin Franklin; his Life, by Himself. Abridged edition, by D. H. Montgomery. Ginn & Co., Boston, 1906. pp. 311.

Selections from Browning, by ROBERT M. LOVETT. Ginn & Co-, Boston, 1906. pp. 208.

Cranford, by E. S. GASKELL. Abridged edition by Wm. E. Simonds. Ginn & Co., Boston, 1906. pp. 209.

Sohrab and Rustum, by MATTHEW ARNOLD. Abridged edition by Trent & Brewster. Ginn & Co., Boston, 1906. pp. 107.

Le Voyage de Monsieur Perichon, par EUGENE LABICHE et E. MARTIN. Ed. Abridged edition by I. H. B. Speers. Ginn & Co., Boston, 1905. pp. 143.

One Hundred Fables, LA FONTAINE. Ed. by O. B. Super. Ginn & Co., Boston, 1906. pp. 187.

Practical Business Arithmetic, by JOHN H. MOORE and GEORGE W. MINER. Ginn & Co., Boston, 1906. pp. 443.

A Tale of Two Cities, by CHARLES DICKENS. Edited with biographical and literary notes by James W. Linn. Ginn & Co., Boston, 1906. pp. 455.

Philippine Folk-Lore Stories, by JOHN M. MILLER. Ginn & Co., Boston, 1904. pp. 128.

Three Layers of Personality and Three Maxims of Education, by H. AUSTIN AIKINS, Ph. D. Reprint from the Western Reserve Univ. Bull., Vol. 8, No. 5, pp. 30.

Am deutschen Herde. Ein Buch über deutsche Sitte und Sprache, von Oskar & Valerie Thiergen. English notes by S. W. Cutting. Ginn & Co., Boston, 1905. pp. 261.

Die Vierzehn Nothelfer, von WILHELM H. RIEHL. Abridged edition by J. F. L. Rashen. Ginn & Co., Boston, 1906. pp. 79.

Sonderabdruck aus Friedrich Ueberwegs Grundriss der Geschichte der Philosophie und Nierter Teil: Das neunzelhute Jahrundert. Philosophie in Nordamerika. 106 Auflage. E. S. Mittler & Sohn, Berlin, 1906. pp. 16.

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